Komoditas : Sayuran
Tahun 2004-2008 (597 judul)

Juyoung Kim, Deok Nyun Kim, Sung Ho Lee, Sang-Ho Yoo, Suyong Lee, Correlation of fatty acid composition of vegetable oils with rheological behaviour and oil uptake, Food Chemistry, Volume 118, Issue 2, 15 January 2010, Pages 398-402, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.05.011.
(http://www.sciencedirect.com/science/article/B6T6R-4W8TW94-1/2/a217a9eb7e7d7637e8046fde7b04d08d)
Abstract:
The fatty acid compositions of seven edible vegetable oils were investigated and correlated with their rheological behaviours and the amount of absorbed oils to fried products. All oil samples showed constant viscosity as a function of shear rate, exhibiting Newtonian behaviours. The highest viscosity was observed in hazelnut oil, followed by olive, canola, corn, soybean, sunflower, and grapeseed oils. In addition, a high correlation (R2 = 0.94) demonstrated that the flow behaviours of vegetable oils were positively governed by their major components (18:1 and 18:2 fatty acids). It was also shown that a more rapid change in viscosity with temperature was observed in the oils containing more double bonds (R2 = 0.71). Furthermore, even though the overall tendency was that the potato strips fried in the oils with high viscosity appeared to cause more oil uptake, a significant effect of oil types on oil uptake was not observed.
Keywords: Vegetable oils; Viscosity; Fatty acid; Oil uptake

Ajay S. Kalamdhad, Yatish K. Singh, Muntjeer Ali, Meena Khwairakpam, A.A. Kazmi, Rotary drum composting of vegetable waste and tree leaves, Bioresource Technology, Volume 100, Issue 24, December 2009, Pages 6442-6450, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.07.030.
(http://www.sciencedirect.com/science/article/B6V24-4X076V8-2/2/13ad477921f86396a1bd3b4a23815e54)
Abstract:
High rate composting studies on institutional waste, i.e. vegetable wastes, tree leaves, etc., were conducted on a demonstration-scale (3.5 m3) rotary drum composter by evaluating changes in some physico-chemical and biological parameters. During composting, higher temperature (60-70 [degree sign]C) at inlet zone and (50-60 [degree sign]C) at middle zone were achieved which resulted in high degradation in the drum. As a result, all parameters including TOC, C/N ratio, CO2 evolution and coliforms were decreased significantly within few days of composting. Within a week period, quality compost with total nitrogen (2.6%) and final total phosphorus (6 g/kg) was achieved; but relatively higher final values of fecal coliforms and CO2 evolution, suggested further maturation. Thus, two conventional composting methods namely windrow (M1) and vermicomposting (M2) tried for maturation of primary stabilized compost. By examining these methods, it was suggested that M2 was found suitable in delivering fine grained, better quality matured compost within 20 days of maturation period.
Keywords: Solid waste; Rotary drum composter; Temperature; Compost dynamics; Vermicomposting

Mee Kin Chai, Guan Huat Tan, Validation of a headspace solid-phase microextraction procedure with gas chromatography-electron capture detection of pesticide residues in fruits and vegetables, Food Chemistry, Volume 117, Issue 3, 1 December 2009, Pages 561-567, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.04.034.
(http://www.sciencedirect.com/science/article/B6T6R-4W3PT8H-D/2/cbb4301159cf5d8a7bda30eb5f312723)

Abstract:
Headspace solid-phase microextraction (HS-SPME) was evaluated for the determination of pesticide residues in fruits and vegetables by gas chromatography with an electron capture detector (GC-ECD). The fibre used was coated with polydimethylsiloxane (100 [mu]m thickness) and the analytical conditions employed have been developed and optimised in a previous work [Chai, M. K., Tan, G. H., & Asha, L. (2008). Optimisation of headspace solid-phase microextraction for the determination of pesticide residues in vegetables and fruits. Analytical Sciences, 24 (2), 273-276]. The results show that the HS-SPME procedure gave a better linear range, accuracy, precision, detection and quantification limits and is adequate for analysing pesticide residues in fruits and vegetables. The average recoveries obtained for each pesticide ranged between 71% and 98% at three fortification levels with the relative standard deviation of less than 5%. Repeatability (0.3-3.7%) and intermediate precision (0.8-2.5%) were shown to be satisfactory. The limits of detection (0.01-1 [mu]g L-1) and the limits of quantification (0.05-5 [mu]g L-1) of these pesticides were much lower than the maximum residue levels (MRL), allowed for fruits and vegetables in Malaysia.
Keywords: HS-SPME; Organochlorine; Organophosphorous; GC-ECD

Ying Huang, Yunbo Luo, Zhengyuan Zhai, Hongxing Zhang, Chaoxiang Yang, Hongtao Tian, Zheng Li, Jiannan Feng, Hui Liu, Yanling Hao, Characterization and application of an anti-Listeria bacteriocin produced by Pediococcus pentosaceus 05-10 isolated from Sichuan Pickle, a traditionally fermented vegetable product from China, Food Control, Volume 20, Issue 11, November 2009, Pages 1030-1035, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.12.008.
(http://www.sciencedirect.com/science/article/B6T6S-4V76453-1/2/319efefadd7dcf16650793653051d585)
Abstract:
Pediococcus pentosaceus 05-10, isolated from a traditionally fermented Sichuan Pickle, produced a bacteriocin (Pediocin 05-10) active against Listeria, Lactobacillus, Streptococcus, Enterococcus, Pediococcus and Leuconostoc. Pediocin 05-10 was sensitive to proteolytic enzymes, but stable between pH 2-10 and heat resistant (15 min at 121 [degree sign]C). It did not adhere to the surface of the producer cells. However, adsorption to both resistant and sensitive cells was observed. Production of the bacteriocin started at the early exponential phase and reached its maximum at the early stationary phase. This result suggested that Pediocin 05-10 was produced in a growth-associated manner. Its mode of action was bactericidal, as determined against Listeria monocytogenes 54002. Pediocin 05-10 was estimated below 6.5 kDa by tricine-SDS-PAGE. The application experiment showed that Pediocin 05-10 could significantly reduce the counts of L. monocytogenes 54002 in pork ham during storage at 4 [degree sign]C for 10 days. Thus, Pediocin 05-10 has potential for application in food preservation, especially in the meat products industry.
Keywords: Pediocin 05-10; Characterization; Application

Jiehong Zhou, Shaosheng Jin, Safety of vegetables and the use of pesticides by farmers in China: Evidence from Zhejiang province, Food Control, Volume 20, Issue 11, November 2009, Pages 1043-1048, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.01.002.
(http://www.sciencedirect.com/science/article/B6T6S-4VDS89Y-1/2/73cd8a14e88c3a1c3d23fc18ca51c51b)
Abstract:
In China there are great challenges to ensure the safety of vegetables, as highly toxic pesticides, which are more than likely to cause high pesticide residues in vegetables [Zhang, Y., Ma, J., Kong, X., & Zhu, Y. (2004). Factors that affect farmers' adoption of non-pollution and green pesticides: Empirical analysis based on data from 15 countries (cities) in Shanxi, Shaanxi and Shandong province. Chinese Rural Economy, 1, 41-49], are still used in the production of vegetables by vegetable farmers. Based on a survey of 507 vegetable farmers from Zhejiang Province, this study

attempted to identify and control the vegetable farmers who were at risk of spraying highly toxic pesticides onto vegetables in China. We found that farmers who were older and less educated and unspecialized vegetable farmers were more likely to use highly toxic pesticides. Our statistical results also indicated that vegetable farmers who received less training and selected handlers as their marketing channel had a tendency to apply highly toxic pesticides, whereas cooperative members were less likely to use these pesticides. Finally, vegetable farmers who had a poor understanding of vegetable safety issues were more likely to use highly toxic pesticides. Policy implications to control the use of highly toxic pesticides and ensure the safety of vegetables in China are discussed.
Keywords: Pesticides; Food safety; Vegetables; China

Yamini Dixit, Anand Kar, Antioxidative activity of some vegetable peels determined in vitro by inducing liver lipid peroxidation, Food Research International, Volume 42, Issue 9, November 2009, Pages 1351-1354, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.06.011.
(http://www.sciencedirect.com/science/article/B6T6V-4WNB51D-1/2/5d590598f19f004eb666521f40aee836)
Abstract:
Vegetable peels are normally thrown away as kitchen wastes. In order to reveal their possible biological value, an in vitro investigation was performed on the antioxidative potential of some peel extracts such as Luffa cylindrica (Lc), Raphanus sativus (Rs), Daucus carota (Dc), Pisum sativum (Ps) and Trichosanthes dioica (Td) in ferrous sulphate (FeSO4), hydrogen peroxide (H2O2) and carbon tetrachloride (CCl4) induced lipid peroxidation (LPO) in liver, the major target organ of any drug. Effects were compared with that of a known antioxidant, butylated hydroxy anisole (BHA). A dose dependent inhibition was observed in all three, FeSO4, H2O2 and CCl4 induced hepatic LPO. However, with respect to one test peel (Rs), the two lower doses (125 and 250 [mu]g/ml) were found to be ineffective. We suggest that the test peels have the potential to inhibit the lipid peroxidation and the observed differential antiperoxidative effects of the test peels could be the result of their poly phenol and flavonoid contents.
Keywords: Liver; Lipid peroxidation; Vegetable peels; Antioxidants

Juan Eugenio Alvaro, Soraya Moreno, Fernando Dianez, Milagrosa Santos, Gilda Carrasco, Miguel Urrestarazu, Effects of peracetic acid disinfectant on the postharvest of some fresh vegetables, Journal of Food Engineering, Volume 95, Issue 1, November 2009, Pages 11-15, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.05.003.
(http://www.sciencedirect.com/science/article/B6T8J-4W7RY8M-2/2/4c9257f3b808ee7afedd39c21d6691d2)
Abstract:
Raw salad vegetables are typically consumed without being cooked. This study compared peracetic acid mix (PAA) and sodium hypochlorite (SH) as disinfectants on vegetables postharvest. Tomato, sweet pepper and cucumber were evaluated in three different experiments: (1) determination of organoleptic characteristics of vegetables by consumer preference; (2) disinfectant capacity comparison of PAA versus SH; and (3) measurement of phytotoxicity of disinfectant products, expressed as alteration of the surface of sweet peppers. Each treatment was replicated four times, and all procedures simulated the procedures carried out in industry. No differences in fruits washed with different treatments were found by the panel. Starting at Day 15, the peracetic acid mixture (PAA) showed better disinfection performance than sodium hypochlorite (SH). The results indicate that the peracetic acid mix is better for washing fruit and improving postharvest life as it is better for the environment (due to low toxicity) and for health safety and does not affect the taste characteristics of the fruit.
Keywords: Shelf life; Sodium hypochlorite; Health safety; Tomato; Sweet pepper; Cucumber; Ecotoxicity on vegetables; Rhizopus stolonifer

D. Goral, F. Kluza, Cutting test application to general assessment of vegetable texture changes caused by freezing, Journal of Food Engineering, Volume 95, Issue 2, November 2009, Pages 346-351, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.05.017.
(http://www.sciencedirect.com/science/article/B6T8J-4WC4YF4-2/2/bf44994c62304e64fed8f4bb0536d20e)
Abstract:
Cutting test is extensively applied to assess quality of vegetables subjected to the freezing treatment. Particularly, the changes of tissue structures are evaluated on the grounds of maximum cutting force of material. The vegetable material was air frozen by two methods, i.e. at natural convection and by impingement fluidization. The cutting test performed on Brookfield materials testing machine was used to evaluate the influence of freezing method on product texture. The scanning electron microscopic images of tissue were included into the supportive analysis of freezing-mediated damages. It was found that a change in maximum cutting force can not be considered as a fully reliable indicator of material quality evaluation owing to the force value dependence on a mass change of material during its treatment. A complementary attribute that depicts freezing damage size proves to be appropriately defined material elasticity.
Keywords: Cutting test; Elasticity; Freezing; Vegetable quality

Jaime Gonzalez-Buesa, Ana Ferrer-Mairal, Rosa Oria, Maria L. Salvador, A mathematical model for packaging with microperforated films of fresh-cut fruits and vegetables, Journal of Food Engineering, Volume 95, Issue 1, November 2009, Pages 158-165, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.04.025.
(http://www.sciencedirect.com/science/article/B6T8J-4W741T5-1/2/2cfa679ef67d5c9b7c8fa7ecdc88ed4b)
Abstract:
For the design of modified atmosphere packaging with microperforated films it is necessary to know the respiratory kinetics of the product and the gas interchange through the packaging. The aim of this work was to describe an empirical equation that relates the microperforation area with the transmission rate in order to present a mathematical model, valid for packages of constant volume. The model should take into account the dependency of the respiration rate with the gas composition and the existence of a hydrodynamic flow through the microperforations. The evolution of the gas composition inside the package predicted by the model has been compared with the results of experiments conducted at 4 [degree sign]C with minimally processed peach (`Andross' and `Calante' cultivars), fresh-cut cauliflower and whole black truffle, by using seven packages of different number (0-14) and size (from 90 x 50 [mu]m to 300 x 100 [mu]m) of microperforations. The respiratory kinetics of these products was previously determined in a closed system. It has been established that the rate of O2 consumption is a potential function of the O2 concentration, while the production of CO2 is linear, except in the case of the truffle which showed a linear dependency for O2 and CO2. The experimental data and those predicted by the model showed a satisfactory agreement for the O2, while the CO2 is underestimated for products with RQ < 1 but in agreement when RQ > 1. The reason for this behaviour could be the CO2 concentration gradient within the package owing to the air flow that moves to compensate pressure differences.
Keywords: MAP; Gas exchange; Respiration rate; Peach; Cauliflower; Truffle

Gustavo S. Garbellini, Giancarlo R. Salazar-Banda, Luis A. Avaca, Sonovoltammetric determination of toxic compounds in vegetables and fruits using diamond electrodes, Food Chemistry, Volume 116, Issue 4, 15 October 2009, Pages 1029-1035, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.068.

(http://www.sciencedirect.com/science/article/B6T6R-4VXB74H-2/2/cea2d16659eb06f0a555a5ec3e747452)
Abstract:
The direct determination of methylparathion in potato and corn extracts and its degradation product 4-nitrophenol in lemon and orange juices by ultrasound-assisted square wave voltammetry using diamond electrodes is reported here. The sonovoltammetric results for both analytes in pure water and in complex food samples showed greater sensitivity and precision and much lower limits of detection and quantification than the silent measurements. The limits of detection for methylparathion in water and corn extract were 4.86 and 10.1 [mu]g L-1, respectively, values 55% and 72% lower than those obtained by silent voltammetry. The recovery values were also very satisfactory and varied between 83.5% and 96.2% for all systems. These improvements for the sonovoltammetric methods are due to electrode surface cleaning and mass transport enhancement towards the electrode surface and proved to be a powerful tool for the detection of toxic residues in complex samples without any pre-treatment or clean-up of the matrices.
Keywords: Toxic residues; Pesticides; Food; Sonoelectroanalysis; Diamond electrode; Square wave voltammetry

M. Navratil, P. Valova, R. Fialova, P. Lauterer, D. Safarova, M. Stary, The incidence of stolbur disease and associated yield losses in vegetable crops in South Moravia (Czech Republic), Crop Protection, Volume 28, Issue 10, October 2009, Pages 898-904, ISSN 0261-2194, DOI: 10.1016/j.cropro.2009.05.008.
(http://www.sciencedirect.com/science/article/B6T5T-4WK3YBS-2/2/925e0b1c6df00337ddf1107d2a118406)
Abstract:
The study was performed at a vegetable farm from 2006 to 2008 in the intensive horticultural area of Lednice (South Moravia, Czech Republic), where a stolbur (phytoplasma) epidemic had occurred. The study showed that the incidence of stolbur disease reached 15% in both tomato (Lycopersicon esculentum) and pepper (Capsicum annuum), and up to 6.7% in celeriac (Apium graveolens). There were significant yield losses in the stolbur-affected plants; total yield losses were up to 60% in tomato, 93% in pepper, and 100% in celeriac. The mean yield was significantly decreased in stolbur-affected plants, compared to healthy plants (i.e. from 42.79 to 17.21 fruits per plant in tomatoes; from 10.11 to 0.74 fruits per plant in peppers). In the locality studied, it was mainly the weed plants Convolvulus arvensis and Cirsium arvense (which were frequently interspersed among the crops), which tested positive for the stolbur phytoplasma and might have provided a reservoir for the phytoplasma infection.
Keywords: Tomato; Pepper; Celeriac; Stolbur phytoplasma; Epidemiology

N. Gupta, D.K. Khan, S.C. Santra, Prevalence of intestinal helminth eggs on vegetables grown in wastewater-irrigated areas of Titagarh, West Bengal, India, Food Control, Volume 20, Issue 10, October 2009, Pages 942-945, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.02.003.
(http://www.sciencedirect.com/science/article/B6T6S-4VNH3TD-1/2/9e456a6a908e08c5b2e7605a99ab6e80)
Abstract:
A total of 46 wastewater samples (untreated: 24 and treated: 22), 35 soil samples and 172 vegetable samples were collected from the wastewater-irrigated area of Titagarh to assess its contamination level with intestinal helminth. 83.3% of raw wastewater, 68.2% of treated wastewater, 68.6% of soil and 44.2% of vegetables in the study area were found to be positive for helminth ova. Vegetables grown in this area were found positive for Ascaris lumbricoides (36%), Trichuris trichiura (1.7%) and hookworms (6.4%). A. lumbricoides was the most predominant species observed in all the samples. Of all the vegetables examined, Pudina was most commonly contaminated followed by Lettuce, Spinach, Coriander, Celery and Parsley. High percentage of

viable-stage intestinal helminth egg positive vegetable samples grown in the wastewater-irrigated study area may pose serious public health hazards.
Keywords: Wastewater irrigation; Ascaris eggs; Trichuris eggs; Hookworm eggs

Marcus Mergenthaler, Katinka Weinberger, Matin Qaim, The food system transformation in developing countries: A disaggregate demand analysis for fruits and vegetables in Vietnam, Food Policy, Volume 34, Issue 5, October 2009, Pages 426-436, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2009.03.009.
(http://www.sciencedirect.com/science/article/B6VCB-4W2M6V2-3/2/08612895132cdb3a7a162ccd1f16237c)
Abstract:
Food systems in developing countries are currently undergoing a rapid transformation towards high-value products and modern supply chains. While supply side aspects of this transformation have been analyzed previously, issues of consumer demand have received much less attention. This article analyses demand patterns for fresh fruits and vegetables in Vietnam, using household survey data and a demand systems approach. Demand for products from modern supply chains - particularly supermarkets and non-traditional imports - is highly income elastic, and the income effect is stronger than the impact of prices and supermarket penetration. This highlights the importance of considering demand side aspects when projecting future trends. Our results imply a continued restructuring of the food sector in the further process of economic development.
Keywords: Transformation of food systems; Supermarkets; Food safety; Non-traditional imports; Southeast Asia; Vietnam

Ryan E. Galt, Overlap of US FDA residue tests and pesticides used on imported vegetables: Empirical findings and policy recommendations, Food Policy, Volume 34, Issue 5, October 2009, Pages 468-476, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2009.05.005.
(http://www.sciencedirect.com/science/article/B6VCB-4WMD2P0-2/2/52694674d7ec56460949099824a7f641)
Abstract:
In the United States, the Environmental Protection Agency (EPA) registers pesticides and sets crop-specific tolerances while the Food and Drug Administration (FDA) enforces EPA regulations by testing plant-based foods for pesticide residues. Pesticide treatment histories are almost always unknown, especially on imported produce, posing an empirical question: to what extent do FDA's residue testing methods used on imported produce correspond to the pesticides used on the crops? In this article I show that FDA residue testing would have missed residues of the majority of pesticides used on two crops exported to the US from Costa Rica in 2003, suggesting that FDA residue testing on imported produce is inadequate in its coverage. Policy recommendations discussed include better communication of US tolerances to exporters around the world; increased testing for pesticides, especially fungicides, that are currently not part of FDA's regular testing procedures; and the creation of price floors and fair trade relationships in the transnational vegetable market to support farmers' attempts to comply.
Keywords: Pesticide residues; Pesticide residue testing; Food imports; Vegetables; Environmental Protection Agency; Food and Drug Administration; United States; Costa Rica

M Antonia Murcia, Antonia M Jimenez, Magdalena Martinez-Tome, Vegetables antioxidant losses during industrial processing and refrigerated storage, Food Research International, Volume 42, Issue 8, October 2009, Pages 1046-1052, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.04.012.
(http://www.sciencedirect.com/science/article/B6T6V-4W741X6-4/2/45a297923309e0d36bad61a29832f319)
Abstract:

Twenty-five vegetables (artichoke, asparagus, beetroot, broad bean, broccoli, Brussels sprout, carrot, cauliflower, celery, chicory, cucumber, eggplant, endive, garlic, green bean, leek, lettuce, maize, onion, pea, pepper, radish, spinach, Swiss chard and zucchini) were used to evaluate their antioxidant activity. All fresh vegetables studied were able to scavenge lipoperoxyl and hydroxyl radicals. All the vegetables also presented good total capacity antioxidant by TEAC assay except cucumber, endive, carrot and zucchini.
Vegetables stored (7 days) in a home refrigerator recorded the same antioxidant activity as fresh samples, except cucumber and zucchini (lipid peroxidation) and broccoli, Brussels sprout and leek (TEAC).
Canned vegetables showed a more pronounced loss of antioxidant activity than frozen vegetables compared with fresh vegetables.
During the shelf life of the processed vegetables (8 months for frozen and 18 months for canned vegetables), some products showed losses (19-48%) of their lipoperoxyl radical scavenging capacity and total antioxidant activity.
Keywords: Fresh vegetables; Antioxidant activity; Free radicals; Storage; Refrigerated; Frozen and canned

R. Moreira, F. Chenlo, M.D. Torres, Simplified algorithm for the prediction of water sorption isotherms of fruits, vegetables and legumes based upon chemical composition, Journal of Food Engineering, Volume 94, Issues 3-4, October 2009, Pages 334-343, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.03.026.
(http://www.sciencedirect.com/science/article/B6T8J-4W0R0G2-2/2/a22fc8b36358fcae3ca28ecc2db05cf1)
Abstract:
A simplified algorithm of prediction of water sorption isotherms for some foods was developed. This model is based on the composition of the main compounds of foods (glucose, fructose, sucrose, salt, protein, fibre and starch) and the influence of temperature was included (it was tested at 25 and 40 [degree sign]C). Reported experimental data were employed as reference to validate the developed prediction model. Sorption isotherms for apple, apricot, banana, chestnut, loquat, quince, raisin, carrot, garlic, pepper, pumpkin, turnip, potato, bean, chickpea and lupine were predicted and compared to those reported in literature. The proposed model was able to predict the presence or absence of crossing between sorption isotherms at different temperatures for the same food. Using the prediction model could be calculated equilibrium moisture content with a determination coefficient (R2) of (>0.982), a mean relative error (E) of (<9.43%) and a standard error (ERMS) of (<0.042 kg (kg d.b.)-1).
Keywords: Water activity; Equilibrium moisture content; Food composition; Temperature

Jyoti Prakash Tamang, Buddhiman Tamang, Ulrich Schillinger, Claudia Guigas, Wilhelm H. Holzapfel, Functional properties of lactic acid bacteria isolated from ethnic fermented vegetables of the Himalayas, International Journal of Food Microbiology, Volume 135, Issue 1, 30 September 2009, Pages 28-33, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2009.07.016.
(http://www.sciencedirect.com/science/article/B6T7K-4WV77PJ-3/2/77a768401f78ff6882c80c0f1228acc5)
Abstract:
A total of 94 strains of Lactic acid bacteria (LAB), previously isolated from ethnic fermented vegetables and tender bamboo shoots of the Himalayas, were screened for functional properties such as acidification capacity, enzymatic activities, degradation of antinutritive factors and oligosaccharides, production of biogenic amines, hydrophobicity and adherence to mucus secreting HT29 MTX cells. Strong acidification and coagulation activities of LAB strains were recorded. Most of the LAB strains showed antimicrobial activities against the used indicator strains; however, only Lb. plantarum IB2 (BFE 948) isolated from inziangsang, a fermented leafy

vegetable product, produced a bacteriocin against Staphylococcus aureus S1. LAB strains showed enzymatic activities and also degraded oligosaccharides. Almost all the strains of LAB were non-producers of biogenic amines except few strains. Some strains of Lb. plantarum showed more than 70% hydrophobicity. Adherence to the mucus secreting HT29 MTX cells was also shown by seven strains indicating their probiotic nature.
Keywords: Functional properties; LAB; Fermented vegetables; Himalayas

Gunter G.C. Kuhnle, Caterina Dell'Aquila, Sue M. Aspinall, Shirley A. Runswick, Annemiek M.C.P. Joosen, Angela A. Mulligan, Sheila A. Bingham, Phytoestrogen content of fruits and vegetables commonly consumed in the UK based on LC-MS and 13C-labelled standards, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 542-554, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.002.
(http://www.sciencedirect.com/science/article/B6T6R-4VT0X8V-5/2/010c974871dd28313bd9b0223e9f511d)
Abstract:
Phytoestrogens are a group of non-steroidal secondary plant metabolites with structural and functional similarity to 17[beta]-oestradiol. Urinary and plasma phytoestrogens have been used as biomarkers for dietary intake, however, this is often not possible in large epidemiological studies or to assess general exposure in free-living individuals. Accurate information about dietary phytoestrogens is therefore important but there is very limited data concerning food contents. In this study, we analysed the phytoestrogen (isoflavone, lignan and coumestrol) content in more than 240 different foods based on fresh and processed fruits and vegetables using a newly developed sensitive method based on LC-MS incorporating 13C3-labelled standards. Phytoestrogens were detected in all foods analysed with a median content of 20 [mu]g/100 g wet weight (isoflavones: 2 [mu]g/100 g; lignans 12 [mu]g/100 g). Most foods contained less than 100 [mu]g/100 g, however, 5% of foods analysed contained more than 400 [mu]g/100 g, in particular soya-based foods and other legumes. The results published here will contribute to databases of dietary phytoestrogen content and allow the more accurate determination of phytoestrogen exposure in free-living individuals.
Keywords: Phytoestrogens; Fruits; Vegetables; Lignans; Isoflavones; Coumestrol; LC/MS

Adrian Avinesh Chetty, Surendra Prasad, Flow injection analysis of nitrate-N determination in root vegetables: Study of the effects of cooking, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 561-566, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.006.
(http://www.sciencedirect.com/science/article/B6T6R-4VT14M6-1/2/e405350ec90b36d7fd1daffd98a49530)
Abstract:
Vegetables are the major vehicles for the entry of nitrate into the human system. Ever-increasing concern over nitrate toxicity has directed a number of countries to lay down maximum allowable threshold concentrations with regards to nitrate-N in vegetables. Fiji is an independent island nation, located in the southern Pacific Ocean, has a tropical oceanic climate and hence expected to have high nitrate-N levels in vegetables. Thus, the present study was devoted to establish a flow injection analysis (FIA) technique for nitrate-N determination in Fiji's commonly consumed fresh and cooked root vegetables such as potato (Solanum tuberosum), dalo (Colocasia esculenta), sweet potato (Ipomoea batatas) and carrot (Daucus carota L.). Activated carbon extraction technique was applied to extract nitrate-N. FIA with colorimetric detection technique having linear dynamic range of determination 1.0-20.0 mg L-1 and detection limit of 0.042 mg L-1 (0.34 mg kg-1), using sulphanilamide and N-(1-naphthyl)ethylenediamine dihydrochloride as colour reagents, was used to determine nitrate-N contents in selected fresh and cooked root vegetables. The samples throughput was 38 h-1. The effects of various cooking (boiling, baking and frying) methods on nitrate-N contents in root vegetables have also been studied. The study

shows that the nitrate content of fresh root vegetables ranges from 53.76-258.00 mg kg-1 whereas boiling reduces nitrate content by 23.30-42.62%. The frying in soya bean oil elevates nitrate contents from 204.53-299.12% but after baking nitrate contents remains almost constant with slight increasing trend from 2.80-8.43%. A comparison of the nitrate obtained by standardised method and the nitrate contents in vegetables of other countries are also presented.
Keywords: Nitrate; Nitrate in root vegetables; Root vegetables; Flow injection analysis; Fiji root vegetables; Fiji

Karima Bakkali, Natividad Ramos Martos, Badredine Souhail, Evaristo Ballesteros, Characterization of trace metals in vegetables by graphite furnace atomic absorption spectrometry after closed vessel microwave digestion, Food Chemistry, Volume 116, Issue 2, 15 September 2009, Pages 590-594, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.03.010.
(http://www.sciencedirect.com/science/article/B6T6R-4VT14M6-6/2/94f52346771eb2aa0444918c3fa1343f)
Abstract:
A simple and expeditious method for the determination of trace metals (cadmium, chromium, copper, manganese and lead) is proposed. The metals are extracted from their matrix by using nitric acid and hydrogen peroxide in a closed-vessel microwave digestion system for their subsequent detection by graphite furnace atomic absorption spectrometry (GFAAS). The sample preparation procedure facilitates the overall analytical process and enables the construction of calibration curves from inorganic standards. The ensuing method provides good linearity and sensitivity for the five metals, with limits of detection and quantization spanning the ranges 0.05-2.20 and 0.15-7.34 [mu]g/kg, respectively. This sensitivity level is quite appropriate for the intended application. Accuracy was assessed by using a certified reference material (NCS ZC85006 Tomato), for which the proposed method provided amounts of metals consistent with their certified values. The proposed method was applied to tomato, pepper and onion, which are widely consumed in Mediterranean countries.
Keywords: Metals; Vegetables; Certified reference material; Microwave digestion; Graphite furnace atomic absorption spectrometry

Dulce Alves Martins, Luisa M.P. Valente, Santosh P. Lall, Apparent digestibility of lipid and fatty acids in fish oil, poultry fat and vegetable oil diets by Atlantic halibut, Hippoglossus hippoglossus L., Aquaculture, Volume 294, Issues 1-2, 1 September 2009, Pages 132-137, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2009.05.016.
(http://www.sciencedirect.com/science/article/B6T4D-4WCTWMH-1/2/6d0880c8a07da2fcc194040918b62238)
Abstract:
An experiment was conducted to determine the apparent digestibility coefficients (ADC) of lipid and fatty acids of 5 experimental diets containing 18% lipid from the following sources: herring oil (HO), poultry fat (PF), flaxseed (FxO), canola (CO) and sunflower (SO) oils. Cholestane and chromic oxide were used as inert digestibility markers. Juvenile halibut (109.5 +/- 27.6 g) were held in tanks equipped with fecal collection columns and fed the experimental diets for 2 weeks. The average lipid ADC (%) of FxO, CO, and SO diets were 94.8 +/- 0.7, 93.4 +/- 0.5 and 93.3 +/- 0.2, respectively, and these values were higher than the ADC of HO (89.7 +/- 0.1) and PF (89.8 +/- 1.5) diets. The apparent digestibility of saturated fatty acids was lower than that of unsaturated fatty acids. The ADC of monoenoic fatty acids was lowest in groups fed PF diet (88.0 +/- 1.3%) and highest with FxO diet (96.1 +/- 0.3%), followed by groups fed CO and SO diets. Polyunsaturated fatty acids were better digested from the FxO diet and the PF diet showed the lowest values. The FxO and SO diets, which contained higher amounts of n-6 fatty acids, also showed relatively high ADC values of these fatty acids. These results suggest that vegetable oils

are well utilized by juvenile halibut, and particularly FxO shows good potential to replace HO in commercial halibut feeds.
Keywords: Atlantic halibut; Lipid; Fatty acid; Apparent digestibility; Cholestane

R.R. Sharma, Dinesh Singh, Rajbir Singh, Biological control of postharvest diseases of fruits and vegetables by microbial antagonists: A review, Biological Control, Volume 50, Issue 3, September 2009, Pages 205-221, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2009.05.001.
(http://www.sciencedirect.com/science/article/B6WBP-4W85MCC-1/2/5c4dbef611a8af575bde26cda4147dec)
Abstract:
Postharvest diseases cause considerable losses to harvested fruits and vegetables during transportation and storage. Synthetic fungicides are primarily used to control postharvest decay loss. However, the recent trend is shifting toward safer and more eco-friendly alternatives for the control of postharvest decays. Of various biological approaches, the use of antagonistic microorganisms is becoming popular throughout the world. Several postharvest diseases can now be controlled by microbial antagonists. Although the mechanism(s) by which microbial antagonists suppress the postharvest diseases is still unknown, competition for nutrients and space is most widely accepted mechanism of their action. In addition, production of antibiotics, direct parasitism, and possibly induced resistance in the harvested commodity are other modes of their actions by which they suppress the activity of postharvest pathogens in fruits and vegetables. Microbial antagonists are applied either before or after harvest, but postharvest applications are more effective than preharvest applications. Mixed cultures of the microbial antagonists appear to provide better control of postharvest diseases over individual cultures or strains. Similarly, the efficacy of the microbial antagonist(s) can be enhanced if they are used with low doses of fungicides, salt additives, and physical treatments like hot water dips, irradiation with ultraviolet light etc. At the international level, different microbial antagonists like Debaryomyces hansenii Lodder & Krejer-van Rij, Cryptococcus laurentii Kufferath & Skinner, Bacillus subtilis (Ehrenberg) Cohn, and Trichoderma harzianum Rifai, are being used. Biocontrol products like Aspire, BioSave, and Shemer etc., have also been developed and registered. Although the results of this technology are encouraging, we need to continue to explore potential uses on the commercial scale in different corners of the world.
Keywords: Bioagents; Biocontrol; Physical treatments; Postharvest decay; Salt additives

Abolle Abolle, Loukou Kouakou, Henri Planche, The viscosity of diesel oil and mixtures with straight vegetable oils: Palm, cabbage palm, cotton, groundnut, copra and sunflower, Biomass and Bioenergy, Volume 33, Issue 9, September 2009, Pages 1116-1121, ISSN 0961-9534, DOI: 10.1016/j.biombioe.2008.01.012.
(http://www.sciencedirect.com/science/article/B6V22-4S094XB-1/2/83a5caeb1f8a84a619148aec369cc7e2)
Abstract:
The feed back experience of using straight vegetable oil (SVO) as a fuel in the existing diesel engines evidences the need for fitting several physical properties, among them the fuel viscosity. An empirical modelling is proposed in order to interpolate viscosity to any kind of diesel oil/SVO blend. This model is fitted on an experimental viscosity database on blends, varying the SVO mass proportion in the blend, the blend temperature between cloud point and 353 K, and including six vegetable oils varying the fatty acids composition. Extrusion rheology was also checked by varying the pressure drop. Measurements show that blends behave Newtonian.
Keywords: Straight vegetable oils (SVOs); Elaesis guineensis; Sabal palmetto; Gossypium hirssutum; Arachis hypogea; Cocos nucifera; Helianthus annuus; Fuel blend; Viscosity; Biofuel; Diesel fuel

Hilde H. Wijngaard, Christian Ro[ss]le, Nigel Brunton, A survey of Irish fruit and vegetable waste and by-products as a source of polyphenolic antioxidants, Food Chemistry, Volume 116, Issue 1, 1 September 2009, Pages 202-207, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.033.
(http://www.sciencedirect.com/science/article/B6T6R-4VP4TPY-2/2/1b963c35100425236f77c2ace4f65929)
Abstract:
In this study, fruit and vegetable by-product and waste sources in Ireland were tested for their antioxidant activity and polyphenol content. The highest levels of antioxidants measured by both ferric reducing antioxidant power (FRAP) and diphenyl-picrylhydrazyl (DPPH) assays, were detected in whole kiwifruit. Of the vegetable by-products, broccoli stems showed the best antioxidant potential. The level of polyphenols as assessed by the Folin-Ciocalteu Reagent (FCR) was significantly correlated with the level of polyphenols by HPLC-DAD (r = 0.93). The level of polyphenols assessed by HPLC-DAD was not significantly correlated with the antioxidant assays. Apple pomace and vegetable by-products were found to be good sources of both polyphenols and antioxidants and due to their abundance may be exploitable resources to use as food ingredients.
Keywords: Fruits waste; Vegetable by-products; Antioxidant activity; Polyphenols; HPLC-DAD; FRAP; DPPH; Folin-Ciocalteu

R.J. Meldrum, C.L. Little, S. Sagoo, V. Mithani, J. McLauchlin, E. de Pinna, Assessment of the microbiological safety of salad vegetables and sauces from kebab take-away restaurants in the United Kingdom, Food Microbiology, Volume 26, Issue 6, September 2009, Pages 573-577, ISSN 0740-0020, DOI: 10.1016/j.fm.2009.03.013.
(http://www.sciencedirect.com/science/article/B6WFP-4W0R0K9-3/2/6f8e640eb2eaa45fd0bf75f7da5f2703)
Abstract:
The purpose of this study was to establish the microbiological safety of salad vegetables and sauces served in kebab take-away restaurants. Comparison with published microbiological guidelines revealed that 4.7% of 1213 salad vegetable samples were of unsatisfactory microbiological quality due to Escherichia coli and/or Staphylococcus aureus levels at >=102 cfu g-1. Another 0.3% of salad samples were of unacceptable quality due to S. aureus at >=104 cfu g-1 (2 samples) or the presence of Salmonella Kentucky (1 sample). Cucumber was the most contaminated salad vegetable with regards to unsatisfactory levels of E. coli (6.0%) or S. aureus (4.5%). Five percent of 1208 sauce samples were of unsatisfactory microbiological quality due to E. coli, S. aureus at >=102 cfu g-1 and/or Bacillus cereus and other Bacillus spp. at >=104 cfu g-1. A further 0.6% of sauce samples were of unacceptable quality due to Bacillus spp. (Bacillus subtilis, Bacillus pumilus, Bacillus licheniformis) at >=105 cfu g-1 or the presence of Salmonella Agbeni (1 sample). More samples of chilli sauce (8.7%) were of unsatisfactory or unacceptable microbiological quality than any other sauce types. The results emphasize the need for good hygiene practices in kebab take-away restaurants handling these types of ready-to-eat products.
Keywords: Salmonella; Bacillus cereus; Escherichia coli; Staphylococcus aureus; Salad vegetables; Sauces

K.L. Marcoe, P. Britten, S. Thorne, T. Sindhuseka, C. Sanossian, What Vegetables Are Consumers Eating?, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A28, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.077.
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M. Latimer, H. Wengreen, T. Vitale, The Role of Sensory-Based, Vegetable-Themed Education in Increasing Vegetable Consumption in Elementary School-Aged Children, Journal of the American

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D.M. Blum-Kemelor, Experiential Teaching Methods to Promote Consumption of Whole Grains, Fruits and Vegetables, and Nutritious Beverages by Elementary School Children: A Montessori Example, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A56, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.173.
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G.E. Ewalt, K. Crotz, Organic Vegetable Farm Tour: A Hands-On Approach to Teaching Dietetic Interns about Taste Superiority of Locally Grown Produce, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A70, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.230.
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(http://www.sciencedirect.com/science/article/B758G-4X25VK2-C8/2/ea5f488bbcb5f57ab31bf458cb8274cb)

K.M. Sloan, M.E. Borja, K. McKee, M. Gannon, K. Arscott, The High Cost of Healthy Eating: The Cost of the Thrifty Food Plan Market Basket for Fruits and Vegetables in Northeastern Pennsylvania Compared to National Data, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A96, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.327.
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H. Wengreen, K. Brown, J. Anderson, T. Vitale, Increasing Vegetable Intake among College Students: A Model for Change, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A104, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.358.
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J.A. Avasthi, M. Ndirangu, B. Hopkins, M.M. Cody, A Low-Income Region Pays More for Lowest-Cost Fruits and Vegetables Compared to a Middle-Income Region of the City of Atlanta, Georgia, Journal of the American Dietetic Association, Volume 109, Issue 9, Supplement 1, ADA Food & Nutrition Conference & Expo, September 2009, Page A104, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.06.361.
(http://www.sciencedirect.com/science/article/B758G-4X25VK2-DN/2/01c067e3d33e9e866679ef1c2258479c)

Alejandrina Campanella, Eduardo Rustoy, Alicia Baldessari, Miguel A. Baltanas, Lubricants from chemically modified vegetable oils, Bioresource Technology, In Press, Corrected Proof, Available online 28 August 2009, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.08.035.
(http://www.sciencedirect.com/science/article/B6V24-4X3MR55-5/2/31828a5d063ae689a34f9df332aa57f9)
Abstract:
This work reports laboratory results obtained from the production of polyols with branched ether and ester compounds from epoxidized vegetable oils pertaining to annual, temperate climate crops (soybean, sunflower and high-oleic sunflower oils), focusing on their possible use as components of lubricant base stocks. To this end, two different opening reactions of the epoxide ring were studied. The first caused by the attack with glacial acetic acid (exclusively in a single organic phase) and the second using short-chain aliphatic alcohols, methanol and ethanol, in acid media. Both reactions proceed under mild conditions: low synthesis temperature and short reaction times and with conversions above 99%. Spectroscopic (NMR), thermal (DSC) and rheological techniques were used to characterize the oils, their epoxides and polyols, to assess the impact of the nature of the vegetable oil and the chemical modifications introduced, including long-term storage conditions. Several correlations were employed to predict the viscosity of the vegetable oils with temperature, and good agreement with the experimental data was obtained.
Keywords: Vegetable oils; Oxirane ring-opening; Polyol derivatives; Lubricants

Dorota Konopacka, Anna Seroczynska, Aleksandra Korzeniewska, Katarzyna Jesionkowska, Katarzyna Niemirowicz-Szczytt, Witold Plocharski, Studies on the usefulness of Cucurbita maxima for the production of ready-to-eat dried vegetable snacks with a high carotenoid content, LWT - Food Science and Technology, In Press, Accepted Manuscript, Available online 22 August 2009, ISSN 0023-6438, DOI: 10.1016/j.lwt.2009.08.012.
(http://www.sciencedirect.com/science/article/B6WMV-4X2DD7B-2/2/5af6cf19eb9f6d5f371fc887acfe03d0)
Abstract:
Recent research indicates a beneficial influence of a diet rich in [beta]-carotene on human health. For that reason, experiments were undertaken to process winter squash with a high carotenoid content into ready-to-eat dried snacks. Sensory quality and dietary value of chips and crispy cubes made from different cultivars were investigated.
The suitability of winter squash for drying purposes depended mainly on the dry matter content in the raw material. Although all the investigated cultivars can be used for producing chips, obtaining high quality porous cubes requires at least 15% of dry matter. Among the investigated cultivars, `Justynka F1' emerged as the most suitable for processing; both chips and cubes produced from this cultivar were characterized by a high sensory quality and contained significant amounts of [beta]-carotene (225-253 [mu]g g-1). Also, the cultivar `Amazonka' could be considered for the production of chips as it allowed us to obtain a product with a high [beta]-carotene content (200 [mu]g g-1) and good sensory properties. The dried ready-to-eat crispy vegetable snacks made from the new cultivars of winter squash could be exploited as a novel attractive product to serve as a valuable source of carotenoids in human diet. Its attractive taste and colour have a good chance of tempting the consumer and thus contributing to a higher consumption of vegetables.

Keywords: winter squash; drying; novel product; sensory assessment; [beta]-carotene

B. Subhasree, R. Baskar, R. Laxmi Keerthana, R. Lijina Susan, P. Rajasekaran, Evaluation of antioxidant potential in selected green leafy vegetables, Food Chemistry, Volume 115, Issue 4, 15 August 2009, Pages 1213-1220, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.01.029.
(http://www.sciencedirect.com/science/article/B6T6R-4VDS8M7-C/2/094f60c7b10dbb1ae2942f6838f5b23e)
Abstract:
Green leafy vegetables represent a class of underexploited plants that are stipulated to be rich sources of natural antioxidants. A fundamental study of free radical-scavenging activity in four plant species, namely Trigonella foenum-graecum, Centella asiatica, Sauropus androgynus and Pisonia alba, was carried out by measuring the ability of methanol extracts of these plants to scavenge radicals generated by in vitro systems and by their ability to inhibit lipid peroxidation. The levels of non-enzymatic antioxidants were also determined by standard spectrophotometric methods. Correlation and regression analysis established a positive correlation between some of these antioxidants and the in vitro free radical-scavenging activity of the plant extracts. The conclusions drawn from the study indicate that in vivo studies, isolation and analysis of individual bioactive components will reveal the crucial role that these plants may play in several therapeutic formulations.
Keywords: Antioxidants; Free radicals; Lipid peroxidation; Flavonoid content; Total phenolic content

Salawu Sule Ola, Giaccherini Catia, Innocenti Marzia, Vincieri Franco Francesco, Akindahunsi Akintunde Afolabi, Mulinacci Nadia, HPLC/DAD/MS characterisation and analysis of flavonoids and cynnamoil derivatives in four Nigerian green-leafy vegetables, Food Chemistry, Volume 115, Issue 4, 15 August 2009, Pages 1568-1574, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.02.013.
(http://www.sciencedirect.com/science/article/B6T6R-4VM9KB6-1/2/7303f2f66be67730a30be2282b301681)
Abstract:
The present study sought to carry out a screening of the phenolic fraction of four Nigerian plants, Ocimum gratissimum L. (Og), Vernonia amygdalina L. (Va), Corchorus olitorius L., (Co) and Manihot utilissima Pohl. (Mu) consumed as food at least once daily by people in southwestern Nigeria and also used for medicinal purposes by local populations. HPLC/DAD and HPLC/ESI/MS analyses were applied as the most suitable techniques to investigate the phenolic content of the dried leaves. This screening allowed detection of up to 17 constituents in Va, five phenols in Mu, eight and 11 different metabolites in Co and Og, respectively. Some compounds have been detected for the first time in these vegetables: cichoric acid in Og, amentoflavone in Mu and several dicaffeoyl compounds in Va and Co. The study of the decoction demonstrated that almost all the phenolic constituents are stable even after a strong heating process such as boiling, as usually applied by Nigerian people prior to the consumption of these vegetables.
Keywords: Ocimum gratissimum; Vernonia amygdalina; Corchorus olitorius L.; Manihot utilissima Pohl.; Phenolic compounds; Decoction; HPLC/DAD/MS

K. Hell, B.G.J. Gnonlonfin, G. Kodjogbe, Y. Lamboni, I.K. Abdourhamane, Mycoflora and occurrence of aflatoxin in dried vegetables in Benin, Mali and Togo, West Africa, International Journal of Food Microbiology, In Press, Corrected Proof, Available online 11 August 2009, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2009.07.039.
(http://www.sciencedirect.com/science/article/B6T7K-4X01P5Y-1/2/3ea1a0d6ffb81f4bc9aa39a147955539)
Abstract:

Fungal infection and aflatoxin contamination was evaluated on 180 samples of dried vegetables such as okra, hot chilli, tomato, melon seeds, onion and baobab leaves from Benin, Togo and Mali collected in September to October 2006. These products are dried to preserve them for lean periods and decrease their perishability. Fungal contamination was evaluated after plating on selective media with a total of 561 fungal isolates identified, ranging from 18 in tomato and 218 in baobab leaves. Baobab leaves, followed by hot chilli and okra showed high incidence of fungal contamination compared to the other dried vegetables, while shelled melon seeds, onion leaves and dried tomato had lower levels of fungal contamination. Species of Aspergillus were dominant on all marketed dried vegetables irrespective of country. Mycotoxin assessment by Reversed-Phase High Performance Liquid Chromatography showed that only okra and hot chilli were naturally contaminated with aflatoxin B1 and aflatoxin B2, at concentrations of 6.0 [micro sign]g/kg on okra and 3.2 [micro sign]g/kg on hot pepper. This is the first time that mycotoxigenic fungi and resultant toxins were found on dried vegetable products sampled from African markets. Previous reports have mostly highlighted the risk of mycotoxin exposure from staple crops in Africa, but such risks now need to be evaluated for other products such as dried vegetables.
Keywords: Dried vegetable products; Natural contamination; Fungi; Mycotoxins; West Africa

Lianqing Shen, Guangyao Su, Xiangyang Wang, Qizhen Du, Kuiwu Wang, Endogenous and exogenous enzymolysis of vegetable-sourced glucosinolates and influencing factors, Food Chemistry, In Press, Corrected Proof, Available online 5 August 2009, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2009.08.003.
(http://www.sciencedirect.com/science/article/B6T6R-4WXSK54-6/2/d483db6b61746b11a73f696b663bf7de)
Abstract:
Glucosinolates are naturally abundant in many vegetable sources. These compounds have limited health benefit in their original forms, however their derived product, sulforaphane, has been shown to be hugely health beneficial in protecting against certain types of cancer. This work investigated the conversion of glucosinolates (glucoraphanin) to sulforaphane using either an endogenous myrosinase or an exogenous myrosinase under various enzymolysis conditions. It was found that an optimum degradation of glucosinolates to sulforaphane by the endogenous method was achieved under the following conditions: a liquid-solid ratio of 3 ml/g, an enzymolysis time of 8 h, at 25 [degree sign]C, at pH 4.0, and with the addition of ascorbic acid 0.02 mg/g. This gave 35% conversion rate of glucosinolates to sulforaphane. However, the exogenous approach appeared to be much more efficient in converting glucoraphanin to sulforaphane. At a combined condition of a liquid-solid ratio of 1000 ml/g, 3 h enzymolysis, at 35 [degree sign]C and pH 5.0, and in the presence of 0.02 mg/g ascorbic acid, as much as 68% of glucoraphanin was found to be degraded to form sulforaphane.
Keywords: Glucosinolate; Glucoraphanin; Sulforaphane; Myrosinase; Enzymolysis

Milan Ciz, Hana Cizova, Petko Denev, Maria Kratchanova, Anton Slavov, Antonin Lojek, Different methods for control and comparison of the antioxidant properties of vegetables, Food Control, In Press, Corrected Proof, Available online 5 August 2009, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.07.017.
(http://www.sciencedirect.com/science/article/B6T6S-4WXSJY5-1/2/02abd496677e9ddd79c22648c34bd3ed)
Abstract:
The present study investigates the antioxidant properties of selected vegetables, using the total peroxyl radical-trapping parameter (TRAP), oxygen radical absorbance capacity (ORAC) and hydroxyl radical averting capacity (HORAC) methods. ORAC, TRAP and HORAC values well correlated with polyphenol content. A good correlation was found also between the methods for measuring antioxidant capacity. Nevertheless, ORAC has been found to be the most sensitive

method to measure chain-breaking antioxidant activity. Although we have found a good correlation between TRAP, ORAC and HORAC, using more than one antioxidant assay is recommended for more detailed understanding the principles of antioxidant properties of samples.
Keywords: Antioxidant activity; Polyphenols; Vegetables

Basant L. Maheshwari, Harsharn Singh Grewal, Magnetic treatment of irrigation water: Its effects on vegetable crop yield and water productivity, Agricultural Water Management, Volume 96, Issue 8, August 2009, Pages 1229-1236, ISSN 0378-3774, DOI: 10.1016/j.agwat.2009.03.016.
(http://www.sciencedirect.com/science/article/B6T3X-4W68DXJ-2/2/0270ecb6f146e87d2a222155d0c1873c)
Abstract:
This study examines whether there are any beneficial effects of magnetic treatment of different irrigation water types on water productivity and yield of snow pea, celery and pea plants. Replicated pot experiments involving magnetically treated and non-magnetically treated potable water (tap water), recycled water and saline water (500 ppm and 1000 ppm NaCl for snow peas; 1500 ppm and 3000 ppm for celery and peas) were conducted in glasshouse under controlled environmental conditions during April 2007 to December 2008 period at University of Western Sydney, Richmond Campus (Australia). A magnetic treatment device with its magnetic field in the range of 3.5-136 mT was used for the magnetic treatment of irrigation water. The analysis of the data collected during the study suggests that the effects of magnetic treatment varied with plant type and the type of irrigation water used, and there were statistically significant increases in plant yield and water productivity (kg of fresh or dry produce per kL of water used). In particular, the magnetic treatment of recycled water and 3000 ppm saline water respectively increased celery yield by 12% and 23% and water productivity by 12% and 24%. For snow peas, there were 7.8%, 5.9% and 6.0% increases in pod yield with magnetically treated potable water, recycled water and 1000 ppm saline water, respectively. The water productivity of snow peas increased by 12%, 7.5% and 13% respectively for magnetically treated potable water, recycled water and 1000 ppm saline water. On the other hand, there was no beneficial effect of magnetically treated irrigation water on the yield and water productivity of peas. There was also non-significant effect of magnetic treatment of water on the total water used by any of the three types of vegetable plants tested in this study. As to soil properties after plant harvest, the use of magnetically treated irrigation water reduced soil pH but increased soil EC and available P in celery and snow pea. Overall, the results indicate some beneficial effect of magnetically treated irrigation water, particularly for saline water and recycled water, on the yield and water productivity of celery and snow pea plants under controlled environmental conditions. While the findings of this glasshouse study are interesting, the potential of the magnetic treatment of irrigation water for crop production needs to be further tested under field conditions to demonstrate clearly its beneficial effects on the yield and water productivity.
Keywords: Magnetic treatment; Water productivity; Recycled water; Salinity; Snow pea; Celery; Pea plants

S.K. Haldar, B.B. Ghosh, A. Nag, Studies on the comparison of performance and emission characteristics of a diesel engine using three degummed non-edible vegetable oils, Biomass and Bioenergy, Volume 33, Issue 8, August 2009, Pages 1013-1018, ISSN 0961-9534, DOI: 10.1016/j.biombioe.2008.01.021.
(http://www.sciencedirect.com/science/article/B6V22-4S094XB-4/2/2f9b644fc170a9e3c6ce8752d34b72df)
Abstract:
This paper investigates non-edible straight vegetable oils of Putranjiva, Jatropha and Karanja to find out the most suitable alternative diesel by a chemical processing. Degumming is an economical chemical process that is done by concentrated phosphoric acid. This process is

applied to the above-mentioned non-edible oils to remove the impurities for the improvement of viscosity, cetane number and better combustion in the diesel engine upto certain blend of diesel and non-edible vegetable oils. Ten percent, 20%, 30% and 40% blends of degummed non-edible oils and diesel are used in a Ricardo variable compression engine to study and compare the performance and emission characteristics. It is observed that the non-edible oil of Jatropha gives the best results related to the performance and emissions at high loads and 45[degree sign] bTDC injection timing.
Keywords: Degumming; Injection timing; Non-edible oil; Performance and emissions; Straight vegetable oil

M.A. Murcia, A.M. Jimenez-Monreal, L. Garcia-Diz, M. Carmona, L. Maggi, M. Martinez-Tome, Antioxidant activity of minimally processed (in modified atmospheres), dehydrated and ready-to-eat vegetables, Food and Chemical Toxicology, Volume 47, Issue 8, August 2009, Pages 2103-2110, ISSN 0278-6915, DOI: 10.1016/j.fct.2009.05.039.
(http://www.sciencedirect.com/science/article/B6T6P-4WHMS7Y-1/2/3a3944ca52f8fa057cee399f874fe07b)
Abstract:
The antioxidant activity of vegetables subjected to minimal processing (in MAP, and intended for cooking or for use in salads), dehydrated condiments and ready-to-eat vegetables such as soups and purees, was assessed by reference to their ability to scavenge lipoperoxyl and hydroxyl radicals and Trolox-equivalent antioxidant capacity. In the case, the MAP vegetables the measurements were repeated during eight days of storage in a domestic refrigerator and after cooking (boiling, microwaving, pressure cooking, griddling, frying and baking). MAP vegetables had a good or very good antioxidant capacity, and showed no significant loss of antioxidant activity or scavenging capacity compared with fresh vegetables. The cooking treatments that keep the antioxidant activity of MAP vegetables are microwaving, sauteing and baking. The most aggressive method of cooking were steaming, boiling and frying. The dehydrated condiments (tablets) showed higher antioxidant activity than the ready-to-eat soup. The enrichment of stews and casseroles, with dehydrated vegetable tablets, and the consumption of soup or vegetable purees represent an increased antioxidant intake in our diet. Also 'ready-to-eat' vegetable soups show antioxidant activity after they have been submitted to heat treatment to increase their shelf-life. They can be recommended as alternatives in our non-stop 'life style'.
Keywords: Free radical; Vegetable; Modified atmosphere; Ready-to-eat; Cooking treatment; Dehydrated-soup

V. Xanthopoulos, N. Tzanetakis, Evanthia Litopoulou-Tzanetaki, Occurrence and characterization of Aeromonas hydrophila and Yersinia enterocolitica in minimally processed fresh vegetable salads, Food Control, In Press, Corrected Proof, Available online 18 July 2009, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.06.021.
(http://www.sciencedirect.com/science/article/B6T6S-4WSY49M-1/2/80495baf2a8ed5f58024f3b54f1bd2af)
Abstract:
A range of commercially available minimally processed ready to eat salads was examined for the presence of Aeromonas and Yersinia, to provide information about their occurrence and characterize them by some phenotypic criteria. The SDS-PAGE of whole-cell proteins was also applied as a taxonomic tool for the rapid and effective identification of Aeromonas hydrophila and Yersinia enterocolitica found among a number of Aeromonas and Yersinia isolates. Aeromonas isolates were obtained from 61.5% of the samples and more than 80% of them were characterized as A. hydrophila. Two isolates were classified by both phenotypic criteria and the SDS-PAGE of whole-cell proteins as Y. enterocolitica. These results therefore suggest the prevalence of A. hydrophila isolates and the low occurrence of Y. enterocolitica in the minimally processed salads.

Keywords: Aeromonas hydrophila; Yersinia enterocolitica; Ready to eat salads; SDS-PAGE

Maria Aparecida de Oliveira, Eliana Guimaraes Abeid Ribeiro, Alzira Maria Morato Bergamini, Elaine Cristina Pereira De Martinis, Quantification of Listeria monocytogenes in minimally processed leafy vegetables using a combined method based on enrichment and 16S rRNA real-time PCR, Food Microbiology, In Press, Corrected Proof, Available online 17 July 2009, ISSN 0740-0020, DOI: 10.1016/j.fm.2009.07.003.
(http://www.sciencedirect.com/science/article/B6WFP-4WSRF1C-6/2/d41779fc1114062eeca18a4368005a19)
Abstract:
Modern lifestyle markedly changed eating habits worldwide, with an increasing demand for ready-to-eat foods, such as minimally processed fruits and leafy greens. Packaging and storage conditions of those products may favor the growth of psychrotrophic bacteria, including the pathogen Listeria monocytogenes. In this work, minimally processed leafy vegetables samples (n = 162) from retail market from Ribeirao Preto, Sao Paulo, Brazil, were tested for the presence or absence of Listeria spp. by the immunoassay Listeria Rapid Test, Oxoid. Two L. monocytogenes positive and six artificially contaminated samples of minimally processed leafy vegetables were evaluated by the Most Probable Number (MPN) with detection by classical culture method and also culture method combined with real-time PCR (RTi-PCR) for 16S rRNA genes of L. monocytogenes. Positive MPN enrichment tubes were analyzed by RTi-PCR with primers specific for L. monocytogenes using the commercial preparation ABSOLUTE(TM) QPCR SYBR(R) Green Mix (ABgene, UK). Real-time PCR assay presented good exclusivity and inclusivity results and no statistical significant difference was found in comparison with the conventional culture method ($p < 0.05$). Moreover, RTi-PCR was fast and easy to perform, with MPN results obtained in ca. 48 h for RTi-PCR in comparison to 7 days for conventional method.
Keywords: Listeria monocytogenes; Minimally processed vegetables; Real-time PCR; 16S rRNA; Microbiological quality

Karl Girard-Lalancette, Andre Pichette, Jean Legault, Sensitive cell-based assay using DCFH oxidation for the determination of pro- and antioxidant properties of compounds and mixtures: Analysis of fruit and vegetable juices, Food Chemistry, Volume 115, Issue 2, 15 July 2009, Pages 720-726, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.002.
(http://www.sciencedirect.com/science/article/B6T6R-4V42JD8-3/2/1c432a5509f3e80d6d976d61f6ae1d47)
Abstract:
Reactive oxygen species play a critical role in cardiovascular diseases, inflammatory diseases, neurodegenerative disorders, cancer and aging. Diets rich in foods containing antioxidants, such as fruits and vegetables, could help prevent these pathologies. It is therefore important to properly assay the antioxidant potentials of these antioxidant foods in order to have a guideline for their proper use. Actual in vitro methodologies are often very specific for one mode of action and do not necessarily reflect the normal biological context in which they are used. In this work, we have developed a cell-based assay using 2',7'-dichlorofluorescin-diacetate (DCFH-DA), a useful indicator of reactive oxygen species (ROS), in order to determine the antioxidant properties of foods, extracts and molecules. Results show a dose-dependent antioxidant activity for pure compounds (in decreasing order of activity: quercetin > caffeic acid > gallic acid > [alpha]-tocopherol) and fruit juices (in decreasing order of activity: strawberries > highbush blueberries > kiwis > peaches). These results are in good agreement with results obtained using the ORACFL assay. However, the cell-based assay detected a pro-oxidant effect with broccoli and carrot juices which was not observed using the ORACFL assay. Mixed isomers of [beta],[alpha]-carotene isolated from carrots were also found to oxidize DCFH about 212% above control-level. Interestingly, the boiling of broccoli and carrot juices inhibits this pro-oxidant effect and restores

the antioxidant properties of the juices. Moreover, the boiling of the [beta],[alpha]-carotene mixed isomers causes their partial degradation and significantly inhibits DCFH oxidation about 68%, suggesting that carotenoids present in broccoli and carrot juices are, in part, responsible for their pro-oxidant effects.
Keywords: Vegetables; Fruits; Antioxidant; Pro-oxidant; ORAC assay; Cell-based assay; DCFH-DA; Carrot; Broccoli; [alpha],[beta]-Carotene

Marcia G. Ventura, Vekoslava Stibilj, Maria do Carmo Freitas, Adriano M.G. Pacheco, Determination of ultratrace levels of selenium in fruit and vegetable samples grown and consumed in Portugal, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 200-206, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.10.089.
(http://www.sciencedirect.com/science/article/B6T6R-4V3SY90-6/2/6e9942fee93511686f2897686c0e9576)
Abstract:
The selenium content in fruit and vegetable samples from two regions in Portugal were analysed using hydride generation atomic fluorescence spectrometry (HG-AFS) and radiochemical nuclear activation analysis (RNAA) - two analytical methods with very low limits of detection. The lower detection limits of HG-AFS, 3 [mu]g kg-1 and 8 [mu]g kg-1 (according to conditions used for digestion), and for RNAA, 10 [mu]g kg-1, meant that it was possible to determine selenium in samples previously analysed using the replicate sample instrumental nuclear activation analysis (RSINAA) with a higher detection limit associated.
The results obtained with the HG-AFS method were similar to those obtained using either RNAA or RSINAA, although in the case of RSINAA significant differences were found in three samples. The good accuracy and increased sample throughput, together with the relatively lower equipment and operating costs make HG-AFS the optimum of the three methods for determining trace amounts of selenium. Values obtained by HG-AFS were from 0.03 [mu]g in tomato to 3.1 [mu]g in cabbage (100 g fresh weight). Based on our results, the contribution of the analysed vegetables and fruits to the daily selenium intake was 1.80 [mu]g per person per day for the Portuguese population.
Keywords: Selenium; HG-AFS; RNAA; Vegetables; Fruits; Portugal

Ans De Roeck, Thomas Duvetter, Ilse Fraeye, Iesel Van der Plancken, Daniel Ndaka Sila, Ann Van Loey, Marc Hendrickx, Effect of high-pressure/high-temperature processing on chemical pectin conversions in relation to fruit and vegetable texture, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 207-213, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.12.016.
(http://www.sciencedirect.com/science/article/B6T6R-4V42JD8-1/2/dca6d167ad2b96ff6020a09659355de3)
Abstract:
Heat sterilization of plant derived food products entails considerable organoleptic and nutritional quality losses. For instance, texture loss of fruits and vegetables occurs, next to turgor pressure losses, mainly due to chemical changes in the cell-wall pectic polysaccharides. High-pressure sterilization, i.e. the combination of high temperature ([greater-or-equal, slanted]90 [degree sign]C) with high pressure ([greater-or-equal, slanted]500 MPa), could present a positive alternative assuring safety while minimizing quality losses. In this study, the potential of high-pressure sterilization in preserving fruit and vegetable texture was evaluated by investigating the effect of combined high-pressure/high-temperature (HP/HT) treatments on two texture related chemical pectin conversions in model sytems. First, a protocol was developed to perform reproducible kinetic studies at HP/HT under constant processing conditions. Subsequently, apple pectin solutions at pH 6.5 were subjected to different HP/HT combinations (500, 600 and 700 MPa/90, 110 and 115 [degree sign]C) and the extent of chemical demethoxylation and [beta]-eliminative depolymerization was determined. At atmospheric pressure, both zero-order reaction rate

constants increased with increasing temperature. At all temperatures, demethoxylation showed a higher rate constant than [beta]-elimination. However, a temperature rise resulted in a stronger acceleration of [beta]-elimination than of demethoxylation. When combining high temperature with high pressure, [beta]-elimination was retarded or even stopped, whereas demethoxylation was stimulated. These results are very promising in the context of the texture preservation of high-pressure sterilized fruits and vegetables, as [beta]-elimination is accepted to be one of the main causes of thermal softening and low methoxylated pectin can enhance tissue strength by forming cross-links with calcium ions present.
Keywords: Pectin; Texture; Demethoxylation; [beta]-elimination; High-pressure sterilization

James Hsu, Jayashree Arcot, N. Alice Lee, Nitrate and nitrite quantification from cured meat and vegetables and their estimated dietary intake in Australians, Food Chemistry, Volume 115, Issue 1, 1 July 2009, Pages 334-339, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.11.081.
(http://www.sciencedirect.com/science/article/B6T6R-4V2NP5F-3/2/47f90f7080b57c0eb4d5be222abf9173)
Abstract:
High dietary nitrate and nitrite intake may increase the risk of gastro-intestinal cancers due to the in vivo formation of carcinogenic chemicals known as N-nitroso compounds. Water and leafy vegetables are natural sources of dietary nitrate, whereas cured meats are the major sources of dietary nitrite. This paper describes a simple and fast analytical method for determining nitrate and nitrite contents in vegetables and meat, using reversed-phase HPLC-UV. The linearity R2 value was >0.998 for the anions. The limits of quantification for nitrite and nitrate were 5.0 and 2.5 mg/kg, respectively. This method is applicable for both leafy vegetable and meat samples. A range of vegetables was tested, which contained <23 mg/kg nitrite, but as much as 5000 mg/kg of nitrate. In cured and fresh meat samples, nitrate content ranged from 3.7 to 139.5 mg/kg, and nitrite content ranged from 3.7 to 86.7 mg/kg. These were below the regulatory limits set by food standards Australia and New Zealand (FSANZ). Based on the average consumption of these vegetables and cured meat in Australia, the estimated dietary intake for nitrate and nitrite for Australians were 267 and 5.3 mg/adult/day, respectively.
Keywords: Anions; Extraction; Carcinogen; Cured meat; Nitrates; Nitrites; Tetrabutylammonium phosphate; Matrix interference

Stephanie Heim, Jamie Stang, Marjorie Ireland, A Garden Pilot Project Enhances Fruit and Vegetable Consumption among Children, Journal of the American Dietetic Association, Volume 109, Issue 7, July 2009, Pages 1220-1226, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.04.009.
(http://www.sciencedirect.com/science/article/B758G-4WKTMYR-N/2/0b8d5003c3ad256f255719c908cb191d)
Abstract:
Fruit and vegetable intake among children is inadequate. Garden-based nutrition education programs may offer a strategy for increasing fruit and vegetable intake in children. A 12-week pilot intervention was designed to promote fruit and vegetable intake among 4th to 6th grade children (n=93) attending a YMCA summer camp. Children participated in garden-based activities twice per week. Weekly educational activities included fruit and vegetable taste tests, preparation of fruit and vegetable snacks, and family newsletters sent home to parents. The pilot intervention was evaluated using a pre and post survey to determine participant satisfaction and the short-term impacts of the program. The process evaluation focused on program satisfaction, whereas the short-term impact evaluation assessed fruit and vegetable exposure, preference, self-efficacy, asking behavior, and availability of fruits and vegetables in the home. Data from the impact evaluation were compared from baseline to follow-up using McNemar's test (dichotomous variables) and Wilcoxon signed rank test (scales/continuous variables). Children reported high levels of enjoyment in the intervention activities. Most children (97.8%) enjoyed taste-testing fruits

and vegetables. Children also liked preparing fruit and vegetable snacks (93.4%), working in their garden (95.6%), and learning about fruits and vegetables (91.3%). Impact data suggest that the intervention led to an increase in the number of fruits and vegetables ever eaten (P<0.001), vegetable preferences (P<0.001), and fruit and vegetable asking behavior at home (P<0.002). Garden-based nutrition education programs can increase fruit and vegetable exposure and improve predictors of fruit and vegetable intake through experiential learning activities. Participation in the 'seed to table' experience of eating may help promote healthful eating behaviors among youth. Food and nutrition professionals should consider garden-based nutrition education programs that connect children with healthful foods through fun, hands-on activities.

Elaine M. Davis, Karen Weber Cullen, Kathleen B. Watson, Melanie Konarik, John Radcliffe, A Fresh Fruit and Vegetable Program Improves High School Students' Consumption of Fresh Produce, Journal of the American Dietetic Association, Volume 109, Issue 7, July 2009, Pages 1227-1231, ISSN 0002-8223, DOI: 10.1016/j.jada.2009.04.017.
(http://www.sciencedirect.com/science/article/B758G-4WKTMYR-P/2/86e01f0273346331428663fdc4265af6)
Abstract:
Low fruit and vegetable intake may be associated with overweight. The United States Department of Agriculture implemented the Fresh Fruit and Vegetable Program in 2006-2007. One Houston-area high school was selected and received funding to provide baskets of fresh fruits and vegetables daily for each classroom during this period. This study assessed the impact of the program on students' fruit and vegetable intake. At program end (May 2007), fruit and vegetable intake surveys were distributed to students at the intervention school as well as at a comparison high school that did not receive the program. Surveys, which were completed anonymously, were received from 34% of intervention and 42% of comparison school students. The students were classified as to whether they met the recommended daily intake of fruit, 100% fruit juice, and vegetables. The probability of meeting the recommendations was assessed with logistic regression analyses, controlling for sex, age, and ethnicity. Compared with the comparison control school students, intervention school students were more likely to report eating fruit and drinking 100% fruit juice at least two times per day (39.3% vs 27.3%; P<0.05) and consuming total fruit, juice, and vegetables (22% vs 18.4%; P<0.05) five or more times per day in the preceding 7 days. More intervention school students (59.1%) than comparison school students (40.9%) reported eating fruit at least one time per day (P<0.05). There were no group differences in vegetable intake. Fresh fruit and vegetable distribution programs provide the opportunity for students to taste a variety of fruits and vegetables, and may improve consumption of these foods by adolescents.

Ana Maria Cordano, Christine Jacquet, Listeria monocytogenes isolated from vegetable salads sold at supermarkets in Santiago, Chile: Prevalence and strain characterization, International Journal of Food Microbiology, Volume 132, Issues 2-3, 30 June 2009, Pages 176-179, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2009.04.008.
(http://www.sciencedirect.com/science/article/B6T7K-4W3HX1P-1/2/42048543ba1470a0a07132c1c84d4d64)
Abstract:
Between 2000 and 2005, 717 samples of three types of salads were analysed for Listeria monocytogenes in Santiago, Chile in order to provide information to Chilean health authorities on the presence of the pathogen in vegetable salad samples and to ascertain the risk of these products for consumers. L. monocytogenes isolates were found in 88 out of 347 (25.4%) samples of frozen vegetable salads and in 22 out of 216 (10.2%) freshly supermarkets prepared, cooked or raw ready-to-eat vegetable salads; no Listeria was isolated from 154 samples of raw minimally processed salads industrially prepared. Enumeration of L. monocytogenes was done by plate count for 20 positive frozen samples, randomly chosen. Most of them (90%) had < 10 cfu/g. MPN

technique was performed for 34 another positive samples; 12 had >= 1100/g, five ranged between 240 and 93, eight between 23 and three and nine had < 3.0. No L. monocytogenes was recovered after cooking 12 contaminated frozen samples. Isolation of strains was done using three selective agars. Sixty-two L. monocytogenes were isolated from lithium chloride phenylethanol moxalactam agar, 95 from Listeria selective agar Oxford formulation, and 103 from polymixin acriflavine lithium chloride ceftazidime aesculin mannitol agar. Fifty isolates (45.5%) belong to PCR group IIb (including strains serovar 1/2b), 41 (37.3%) to PCR group IVb (including strains serovar 4b), 17 (15.5%) to PCR group IIa (including strains serovar 1/2a), and 2 (1.8%) to PCR group IIc. With the use of DNA macrorestriction patterns analysis, 17 different clusters were detected among 71 isolates, with P10, the most frequent with 25 isolates (35.2%) of PCR group IIb.
Keywords: Listeria monocytogenes; Vegetable salads; Chile

Hu Lizhi, K. Toyoda, I. Ihara, Discrimination of olive oil adulterated with vegetable oils using dielectric spectroscopy, Journal of Food Engineering, In Press, Accepted Manuscript, Available online 30 June 2009, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2009.06.045.
(http://www.sciencedirect.com/science/article/B6T8J-4WN2XMH-1/2/1fc3abc826191b4a8edf9424754f5138)
Abstract:
The study focused on application of dielectric spectroscopy to identify the adulteration of olive oil. The dielectric properties of binary mixture of oils were investigated in the frequency range of 101 Hz to 1 MHz. A partial least squares (PLS) model was developed and used to verify the concentrations of the adulterant. Furthermore, the principal component analysis (PCA) was used to classify olive oil sample as distinct from other adulterants based on their dielectric spectra. The results showed that the dielectric spectra of binary mixture of olive oil spiked with other oils increased with increasing concentration of soy, corn, canola, sesame, and perillar oils from 0-100% (w/w) over the measured frequency range. PLS calibration model showed a good prediction capability for the concentrations of the adulterant. For olive oil adulterated with soy oil, the results showed that the RMS was 0.053, sd(RMS), 0.017 and Q2 value was 0.967. PCA classification plots for all oil samples showed clear performance in the differentiation for the different concentrations of the adulterant. Each of the oil samples could be easily grouped in different clusters using dielectric spectra. From the results obtained in this research, dielectric spectroscopy could be used to discriminate the olive oil adulterated with the different types of the oils at levels of adulteration below 5%.
Keywords: Adulteration; Dielectric spectra; Dielectric constant [epsilon]', discrimination; edible oil

T. Manso, R. Bodas, T. Castro, V. Jimeno, A.R. Mantecon, Animal performance and fatty acid composition of lambs fed with different vegetable oils, Meat Science, In Press, Corrected Proof, Available online 28 June 2009, ISSN 0309-1740, DOI: 10.1016/j.meatsci.2009.06.035.
(http://www.sciencedirect.com/science/article/B6T9G-4WMM7G7-1/2/25a2291865bfc7b0be3a67134b75b365)
Abstract:
Twenty-seven lambs were used to investigate the effects of the inclusion of 4% hydrogenated palm oil (HPO) or sunflower oil (SFO) in the concentrate on animal performance, carcass and meat quality and fat characteristics and fatty acid composition. Animals (16.2 +/- 0.27 kg initial weight) were fed concentrate (Control, HPO or SFO) and barley straw ad libitum and slaughtered at 25 kg. SFO lambs tended to eat less concentrate than HPO animals ($P < 0.10$). Neither HPO nor SFO affected any of the carcass characteristics studied, meat pH and meat and fat colour ($P > 0.05$). SFO decreased proportions of C16:0, C18:1 cis-11 and C18:3 ($P < 0.05$) and increased C18:1 trans ($P < 0.001$) and C18:2/C18:3 ratio ($P < 0.05$). Atherogenicity index was lower ($P < 0.05$) when SFO was included in the concentrate. HPO did not affected and SFO improved fatty acid composition of fattening lambs without affecting animal performance.

Keywords: Palm oil; Sunflower oil; Fattening lambs; Fatty acid; Atherogenicity

C.M.A. Rodrigues, C.M. Della Lucia, R.M.C. Azeredo, A.M. Cota, A.M.C. Santana, H.M. Pinheiro-Sant'Ana, Control of vitamin C losses in vegetables prepared at a food service, Food Control, In Press, Corrected Proof, Available online 23 June 2009, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2009.05.020.
(http://www.sciencedirect.com/science/article/B6T6S-4WKK1J4-1/2/50c031403011b007a2404d38b1523272)
Abstract:
This study aimed to elaborate a set of measures to control vitamin C losses in vegetables prepared at a food service (FS). Vegetables were randomly selected for vitamin C analysis by high performance liquid chromatography (HPLC) after delivery of raw material and during distribution for consumption of the food prepared. Some principles underlying the Hazards Analysis and Critical Control Points (HACCP) were applied to identify the Nutritional Control Points (NCP) for vitamin C losses. A Nutritional Control Measure (NCM) was adopted for each NCP as well as the monitoring criteria. The vegetables were again collected for vitamin C analysis after adoption of the NCMs. The results indicated reduction of vitamin C losses with NCM adoption.
Keywords: Ascorbic acid; Nutritional quality; HACCP

Elizabeth Brown, Sandrine Dury, Michelle Holdsworth, Motivations of consumers that use local, organic fruit and vegetable box schemes in Central England and Southern France, Appetite, In Press, Corrected Proof, Available online 18 June 2009, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.06.006.
(http://www.sciencedirect.com/science/article/B6WB2-4WJH9Y5-3/2/d197684f32cc4c13532d3524debf1cb8)
Abstract:
Commercial fruit and vegetable box schemes are rapidly growing initiatives that allow customers to make local, organic food choices. This study investigated the socio-demographic profile of consumers using local commercial box schemes, and investigated the barriers and motivations of customers. Cross-sectional surveys using identical questionnaires were conducted in Montpellier, France and Nottingham, England. Box scheme users in both countries were primarily rather affluent professionals. The English reported access to local produce that has travelled less food miles (a more altruistic reason) to be the most important motive to purchasing from the box scheme, whereas the French stated quality of produce (a more hedonistic reason) to be key. Both countries ranked ecological commitment and access to organic food as the next most important influences on their participation. The findings reinforce the importance of food quality and pleasure for the French generally, although once this fundamental criterion has been fulfilled, French box scheme users appear equally motivated by contributing positively to the ecosystem. In England, the desire to eat out of season food was cited as the main barrier to making more sustainable food choices. Cost was an important obstacle to increasing consumption of food from sustainable sources in both countries.
Keywords: Box scheme; Sustainable food choice; England; France; Organic; Local food; Attitudes; Motivation; Barriers

Krystyna Pyrzynska, Selenium speciation in enriched vegetables, Food Chemistry, Volume 114, Issue 4, 15 June 2009, Pages 1183-1191, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.11.026.
(http://www.sciencedirect.com/science/article/B6T6R-4TY48X3-6/2/188518f9a69710efea89b41e42a283fd)
Abstract:

The ability of several plants to accumulate and transform inorganic forms of selenium into bioactive organic compounds has important implications for human nutrition and health. Se-enriched Allium group vegetables such as garlic, onion and ramps have been mainly the subject of several studies in the recent years. Apart from the total Se uptake, enrichment treatments normally undergo certain metabolic changes that determine the final product as well as its translocation and accumulation in different plant tissues. For this reason, it is important to find which form of selenium should be used for supplementation to obtain a high content of this element in the final plant. Moreover, its distribution in different parts of plants as well as characterisation and quantification of individual species becomes an issue. This review gives a brief, critical overview of the studies carried out to characterise selenium species produced by different enriched vegetables. The use of different extraction and clean-up methodologies will be discussed in conjunction with different selenium enrichment procedures.
Keywords: Selenium species; Enriched vegetables; Extraction; HPLC

M.D. Eyre, D. Labanowska-Bury, J.G. Avayanos, R. White, C. Leifert, Ground beetles (Coleoptera, Carabidae) in an intensively managed vegetable crop landscape in eastern England, Agriculture, Ecosystems & Environment, Volume 131, Issues 3-4, June 2009, Pages 340-346, ISSN 0167-8809, DOI: 10.1016/j.agee.2009.02.006.
(http://www.sciencedirect.com/science/article/B6T3Y-4VX0BD9-2/2/86d85ee4da7f732ffa3b95dda8f11529)
Abstract:
Four fields (three organic and one conventionally managed) in an intensive vegetable producing landscape in eastern England were sampled for ground beetles in 2005 and 2006, using pitfall traps, to investigate species activity and species assemblage distribution within five crop and three field margin types. In addition, non-crop ditch sites were also sampled. Three species assemblages in the fields were strongly related to crop type, with two others consisting of non-crop sites, one dominated by field margins, the other by ditch sites. Species activity and richness in fields were also strongly, and significantly, associated with crop type, with most in organic Brassica crops (cauliflower, cabbage, broccoli), less in organic leeks and least in conventional calabrese. Some species were significantly more active in weedier fields but others preferred more open ground. Considerably more species were recorded from first-year planted field margins, with fewest species active in unplanted margins. Activity was also relatively low in densely vegetated second-year margins. There appeared to be little relationship between species activity in the margins and that in the crop fields. Ground beetle species are important for the predation of cabbage root fly eggs in Brassica crops, especially in organic fields. In order to enhance and maximise appropriate ground beetle species activity and predation within vegetable fields, it is likely that management within both fields and margins would be required, as well as some method for increasing movement of predators from margins into fields.
Keywords: Ground beetles; Beneficial invertebrates; Organic farming; Brassicas; Leeks; Field margins

Karen Weber Cullen, Kathleen B. Watson, Melanie Konarik, Differences in fruit and vegetable exposure and preferences among adolescents receiving free fruit and vegetable snacks at school, Appetite, Volume 52, Issue 3, June 2009, Pages 740-744, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.04.001.
(http://www.sciencedirect.com/science/article/B6WB2-4W211XG-1/2/661974e647d9c43883e606f6a15c813b)
Abstract:
Low fruit and vegetable (FV) intakes are associated with excess body weight. The United States Department of Agriculture sponsors a Free Fruit and Vegetable Program in schools whereby students receive free FV snacks daily. This study assessed whether the program improved student

exposure to and preferences for FV in a Houston high school in 2006-2007. Anonymous, post-intervention only FV exposure and preference surveys were completed by 2000 intervention school students and 1600 students in a comparison school during May, 2007. Differences in FV exposure and preferences were assessed, as well as differences in preferences between those students who tasted the item for the first time at school compared to those who had tasted the item before. The comparison school average scores for prior FV exposure and vegetable preferences were significantly higher than the intervention school scores. Intervention school students who had tasted the item previously reported significantly higher preferences than students who had tasted it for the first time at school. Access to the Free Fruit and Vegetable Program did not appear to improve high school student reported FV exposure and preferences. Future research should investigate the connection between food exposure, preferences and consumption in adolescents.
Keywords: Free Fruit and Vegetable Program; USDA; Adolescents; High school; Diet; Preferences; Exposure

Marc T. Kiviniemi, Kate M. Duangdao, Affective associations mediate the influence of cost-benefit beliefs on fruit and vegetable consumption, Appetite, Volume 52, Issue 3, June 2009, Pages 771-775, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.02.006.
(http://www.sciencedirect.com/science/article/B6WB2-4VPD6H0-3/2/894ef4cb7eeb106372faabd3f680c7d7)
Abstract:
Consumption of fruits and vegetables is far lower than recommended. The behavioral affective associations model posits that affective associations influence behavior and mediate the influence of perceived benefits and barriers on behavioral choices. The purpose of this study was to test the model's predictions about the influence of affective associations and benefits/barriers on fruit and vegetable consumption. Community adults (N = 446) reported perceived benefits and barriers to fruit and vegetable consumption, affective associations with fruits and vegetables, and current fruit and vegetable intake. Affective associations predicted behavior and mediated the influence of benefits and barriers on behavior, supporting predictions made by the behavioral affective associations model. This highlights the need to incorporate affective factors in decision-making models and intervention strategies.
Keywords: Decision making; Health knowledge; Health behavior; Affect; Fruits and vegetables

T.V.E. Kral, A.C. Kabay, L.S. Roe, B.J. Rolls, Effects of increasing the portion size of fruit and vegetable side dishes at a meal on children's intake regulation, Appetite, Volume 52, Issue 3, June 2009, Page 842, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.04.115.
(http://www.sciencedirect.com/science/article/B6WB2-4WFTBY5-3W/2/5194b569e6ee8c559ff94e57c48ac2c6)

Stella Bezergianni, Aggeliki Kalogianni, Iacovos A. Vasalos, Hydrocracking of vacuum gas oil-vegetable oil mixtures for biofuels production, Bioresource Technology, Volume 100, Issue 12, June 2009, Pages 3036-3042, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.01.018.
(http://www.sciencedirect.com/science/article/B6V24-4VP12F2-9/2/806130269b45b5cd7ce2f2b836f8674a)
Abstract:
Hydrocracking of vacuum gas oil (VGO) - vegetable oil mixtures is a prominent process for the production of biofuels. In this work both pre-hydrotreated and non-hydrotreated VGO are assessed whether they are suitable fossil components in a VGO-vegetable oil mixture as feed-stocks to a hydrocracking process. This assessment indicates the necessity of a VGO pre-hydrotreated step prior to hydrocracking the VGO-vegetable oil mixture. Moreover, the comparison of two different mixing ratios suggests that higher vegetable oil content favors hydrocracking product yields and qualities. Three commercial catalysts of different activity are utilized in order to identify a range of

products that can be produced via a hydrocracking route. Finally, the effect of temperature on hydrocracking VGO-vegetable oil mixtures is studied in terms of conversion and selectivity to diesel, jet/kerosene and naphtha.
Keywords: Hydrocracking; Vegetable oil; Biofuels

S. Venkata Mohan, G. Mohanakrishna, R. Kannaiah Goud, P.N. Sarma, Acidogenic fermentation of vegetable based market waste to harness biohydrogen with simultaneous stabilization, Bioresource Technology, Volume 100, Issue 12, June 2009, Pages 3061-3068, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.12.059.
(http://www.sciencedirect.com/science/article/B6V24-4VNCBY2-2/2/aa07c1741186ecc02ceb296b355a0258)
Abstract:
Vegetable based market waste was evaluated as a fermentable substrate for hydrogen (H2) production with simultaneous stabilization by dark-fermentation process using selectively enriched acidogenic mixed consortia under acidophilic microenvironment. Experiments were performed at different substrate/organic loading conditions in concurrence with two types of feed compositions (with and without pulp). Study depicted the feasibility of H2 production from vegetable waste stabilization process. H2 production was found to be dependent on the concentration of the substrate and composition. Higher H2 production and substrate degradation were observed in experiments performed without pulp (23.96 mmol/day (30.0 kg COD/m3); 13.96 mol/kg CODR (4.8 kg COD/m3)) than with pulp (22.46 mmol/day (32.0 kg COD/m3); 12.24 mol/kg CODR (4.4 kg COD/m3)). Generation of higher concentrations of acetic acid and butyric acid was observed in experiments performed without pulp. Data enveloping analysis (DEA) was employed to study the combined process efficiency of system by integrating H2 production and substrate degradation.
Keywords: Mixed consortia; Volatile fatty acids; Chemical oxygen demand (COD); Carbohydrates; Data enveloping analysis (DEA)

Cesar de Morais Coutinho, Ming Chih Chiu, Rodrigo Correa Basso, Ana Paula Badan Ribeiro, Lireny Aparecida Guaraldo Goncalves, Luiz Antonio Viotto, State of art of the application of membrane technology to vegetable oils: A review, Food Research International, Volume 42, Issues 5-6, June-July 2009, Pages 536-550, ISSN 0963-9969, DOI: 10.1016/j.foodres.2009.02.010.
(http://www.sciencedirect.com/science/article/B6T6V-4VKDMSG-2/2/cdba72ddf61fcea81cf5544d7067bc93)
Abstract:
The purpose of this review has as objective to present the applications and the recent development of membrane technology in the vegetable oil processing. It approaches fundamentals aspects in the processes of separation by membranes as well as present the related works in the degumming, dewaxing, deacidification, solvent recovery, pigment removal, concentration of minor components and separation of emulsions. Its shows that oils processing with membranes, done under low temperatures, with substantial exclusion of stages, presents a promising alternative to conventional method towards the achievement of cost-effective processes that are technically advanced and less noxious to environment.
Keywords: Vegetable oils; Membrane technology; Polymeric membranes; Ceramic membranes; Membrane processing

Teresa Leszczynska, Agnieszka Filipiak-Florkiewicz, Ewa Cieslik, Elzbieta Sikora, Pawel M. Pisulewski, Effects of some processing methods on nitrate and nitrite changes in cruciferous vegetables, Journal of Food Composition and Analysis, Volume 22, Issue 4, June 2009, Pages 315-321, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.10.025.

(http://www.sciencedirect.com/science/article/B6WJH-4VRP242-2/2/2692a540070b423e530617a59a47dbcd)
Abstract:
Changes in nitrate and nitrite content in selected cruciferous vegetables, resulting from blanching, boiling, freezing, frozen storage and boiling after previous freezing, were analyzed. The highest level of nitrate was detected in curly kale (302.0 mg/kg) and the lowest in green cauliflower (61.0 mg/kg). As for nitrite, the respective levels were found in white cauliflower (3.49 mg/kg) and green cauliflower (1.47 mg/kg). Both blanching and boiling of the cruciferous vegetables caused a considerable decrease in the total nitrate content, but at the same time no explicit changes were noted regarding the level of nitrite. In the vegetables stored frozen for 48 h, previously blanched, either an increase or no change was observed in the nitrate level, with the changes in the nitrite level being irregular. In the vegetables stored frozen for 4 months, previously blanched, generally a decrease was noted in the nitrate, and an increase in the nitrite level compared to the levels in the blanched vegetables. Boiling of the frozen vegetables (stored frozen for 48 h) most frequently caused a considerable reduction of the nitrate level in comparison to the content in the raw frozen vegetables. No changes were observed resulting from the boiling of the vegetables previously stored frozen for 4 months. Simultaneously, no explicit changes were found regarding the nitrite level in the frozen vegetable after boiling.
Keywords: Cruciferous vegetables; Blanching; Boiling; Freezing; Nitrate; Nitrite; Food processing; Cooking methods; Food contamination; Food safety; Food composition

Francisco J. Cuesta, Manuel Lamua, Errata in 'Fourier series solution to the heat conduction equation with an internal heat source linearly dependent on temperature: Application to chilling of fruit and vegetables' [J. Food Eng. 90 (2009) 291-299], Journal of Food Engineering, Volume 92, Issue 3, June 2009, Page 359, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.12.006.
(http://www.sciencedirect.com/science/article/B6T8J-4V75YK4-1/2/dd34da7ffb90c0a1ed22ab927e68a9f6)

Yun-Sang Choi, Ji-Hun Choi, Doo-Jeong Han, Hack-Youn Kim, Mi-Ai Lee, Hyun-Wook Kim, Jong-Youn Jeong, Cheon-Jei Kim, Characteristics of low-fat meat emulsion systems with pork fat replaced by vegetable oils and rice bran fiber, Meat Science, Volume 82, Issue 2, June 2009, Pages 266-271, ISSN 0309-1740, DOI: 10.1016/j.meatsci.2009.01.019.
(http://www.sciencedirect.com/science/article/B6T9G-4VFK82K-5/2/fd46335e4d026a40b90f1433e2668d79)
Abstract:
The effects of vegetable oils prepared from olive, corn, soybean, canola, or grape seed, and rice bran fiber on the composition and rheological properties of meat batters were studied. Pork fat at 30% in the control was partially replaced by one of the vegetable oils at 10% in addition to reducing the pork fat to 10%. The chemical composition, cooking characteristics, texture properties, and viscosity of low-fat meat batters were analyzed. The moisture, protein, ash content, uncooked and cooked pH values, b*-value, hardness, cohesiveness, gumminess, chewiness, and viscosity of meat batters with vegetable oil and rice bran fiber were all higher than the control. In addition, batters supplemented with vegetable oil and rice bran fiber had lower cooking loss and better emulsion stability. Low-fat meat batters with reduced pork fat content (10%) and 10% vegetable oil plus rice bran fiber had improved characteristics relative to the regular fat control.
Keywords: Vegetable oil; Frankfurter; Dietary fiber; Rice bran; Low-fat

Xiu-Zhen HAO, Dong-Mei ZHOU, De-Qian HUANG, Long CANG, Hai-Lin ZHANG, Hui WANG, Heavy Metal Transfer from Soil to Vegetable in Southern Jiangsu Province, China, Pedosphere, Volume 19, Issue 3, June 2009, Pages 305-311, ISSN 1002-0160, DOI: 10.1016/S1002-0160(09)60121-1.

(http://www.sciencedirect.com/science/article/B82XV-4W85J4R-4/2/86c779d998a1937b2871fd3d94565c6b)
Abstract: ABSTRACT
Vegetable fields in peri-urban areas receive large amounts of extraneous heavy metals because of rapid urbanization and industrialization in China. The concentrations of Cu, Zn, and Pb in 30 soil samples and 32 vegetable samples, collected from 30 different sites in southern Jiangsu Province of China, were measured and their transfer from soil to vegetable was determined. The results showed that the soil samples had wide ranges of pH (4.25-7.85) and electrical conductivity (EC) (0.24-3.42 dS m-1). Among the soil samples, there were four soil samples containing higher Cu and two soil samples containing higher Zn concentrations than those specified in the Chinese Soil Environmental Quality Standard II. However, no vegetable sample was found to contain a high level of Cu or Zn. In contrast, one vegetable sample contained 0.243 mg Pb kg-1 FW, which was above the Chinese Food Hygiene Standard, whereas the corresponding soil Pb concentration was lower than the Chinese Soil Environmental Quality Standard II. The transfer coefficients of Cu of all vegetable samples exceeded the suggested coefficient range, implying that extraneous Cu had high mobility and bioavailability to vegetables. There was no significant correlation between extractable soil heavy metal concentrations with four kinds of extractants and soil pH, EC, heavy metal concentrations in vegetables and soils, except that soil pH correlated well with the extractable soil Cu, Zn, and Pb concentrations with 1.0 mol L-1 NH4NO3. Moreover, diethylenetriamine pentaacetic acid (DTPA) extraction method was a more efficient method of extracting heavy metals from the soils independent of soil pH and EC than other three methods used.
Keywords: heavy metal; soil; transfer coefficients; vegetable

T. Castro, T. Manso, V. Jimeno, M. Del Alamo, A.R. Mantecon, Effects of dietary sources of vegetable fats on performance of dairy ewes and conjugated linoleic acid (CLA) in milk, Small Ruminant Research, Volume 84, Issues 1-3, June 2009, Pages 47-53, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2009.05.005.
(http://www.sciencedirect.com/science/article/B6TC5-4WNPDM4-1/2/72b975ad331b652c5183e187909b66d7)
Abstract:
Two experiments were carried out to study the effects of supplementing the ration of lactating ewes with vegetable fats (sunflower oil, SO or hydrogenated palm oil, HPO; HIDROPALM(R)) on diet digestibility, milk yield and milk composition, and on the concentration of the conjugated linoleic acid (CLA) C18:2 cis-9 trans-11 and C18:1 trans-11 (vaccenic acid, VA) and other main fatty acids in milk fat. Treatments involved a control diet, without added oil, and 2 diets supplemented with either 12 g/kg SO or 12 g/kg HPO on a dry matter (DM) basis. In the first experiment, 6 non-pregnant, non-lactating Lacaune ewes were used following a 3 x 3 replicated Latin Square design. Addition of vegetable fat supplement to the diet increased digestibility of DM, organic matter (OM) and crude protein (CP), but did not affect that of the ether extract (EE), neutral detergent fibre (NDF) or acid detergent fibre (ADF). In the second experiment, 60 Lacaune dairy ewes mid-way through lactation (120 +/- 12 days in milk, 0.98 +/- 0.03 kg/day average milk yield) were divided into three equal-sized groups each of which was assigned to one of the three experimental diets for 4 weeks. Compared with the control treatment, supplementation with HPO increased milk yield and energy-corrected milk. But neither vegetable fat supplement modified percentages of fat and protein in milk. Supplementation with HPO increased C14:1, C16:1 and C16:0 content and reduced C18:0 and C18:1 cis-9 content in milk fat. Supplementation with SO increased the VA content in milk fat by 36% and that of cis-9 trans-11 CLA by 29% in comparison with the control diet. Supplementation with HPO led to milk fat with 15% more cis-9 trans-11 CLA than control milk. In conclusion, adding a moderate dose of HPO or SO to the diets increased CLA concentration in milk fat. Nevertheless, supplementation with SO was more effective than HPO in

increasing CLA concentration in milk fat and reducing the atherogenicity index, improving milk quality from the human health standpoint.
Keywords: Vegetable fats; Milk performance; Milk CLA; Dairy ewe

G. Aruna, B.S. Mamatha, V. Baskaran, Lutein content of selected Indian vegetables and vegetable oils determined by HPLC, Journal of Food Composition and Analysis, In Press, Accepted Manuscript, Available online 22 May 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2009.03.006.
(http://www.sciencedirect.com/science/article/B6WJH-4WBT44K-1/2/b7e59450fe4e32914ae6c6e462066e28)
Abstract:
Fruits and vegetables are good sources of vitamins, minerals and carotenoids. In this study, lutein and zeaxanthin content of selected vegetables and vegetable oils commonly used in the Indian diet have been determined by high performance liquid chromatography (HPLC). Data generated from this study is vital for the accurate determination of the dietary intake of lutein and development of comprehensive food tables. Among vegetables studied, the lutein level ([mu]g/100gm edible portions) was the highest for pumpkin (10,620), chilli (1,900) and brinjal (eggplant or aubergine) (1,800), respectively. Lutein level varied ranging from 65 to 990 [mu]g in other vegetables screened. Among the commercial vegetable oils analyzed, the lutein level ([mu]g/100gm of oil) was the highest in mustard oil (772) and palm oil (11.55), whereas lutein was not detected in sunflower, olive, almond, rice bran and corn oils. Hence, it could be suggested that these vegetables and oils should be consumed as rich sources of lutein for health benefits.
Keywords: Lutein; Zeaxanthin; Carotenoid-rich foods; Vegetables; Vegetable oils; Indian diet; HPLC; Age-related macular degeneration; ARMD; Food analysis; Food composition

Young-Moo Park, Joon Yeob Lee, Sang-Ho Chung, In Seon Park, Seung-Yeon Lee, Deog-Keun Kim, Jin-Suk Lee, Kwan-Young Lee, Esterification of used vegetable oils using the heterogeneous WO3/ZrO2 catalyst for production of biodiesel, Bioresource Technology, In Press, Corrected Proof, Available online 9 May 2009, ISSN 0960-8524, DOI: 10.1016/j.biortech.2009.04.025.
(http://www.sciencedirect.com/science/article/B6V24-4W84GRX-3/2/949d0626ff4a0cb76b530ebfadc049a2)
Abstract:
Tungsten oxide zirconia, sulfated zirconia and Amberlyst-15 were examined as a catalyst for a conversion of used vegetable oils (VOs) to fatty acid methyl esters (FAMEs). Among them, tungsten oxide zirconia was a promising heterogeneous catalyst for the production of biodiesel fuels from used VOs because of high activity in the conversion over 93% and no leaching WO3 in the esterification reaction. The reaction conditions were optimized. A study for optimizing the reaction parameters such as the reaction temperature, stirring speed, WO3 loading over ZrO2 and reaction time, was carried out. The catalyst was characterized by BET, XRD, FT-IR, and NH3-TPD. With increasing WO3 loading over ZrO2, the triclinic phase of WO3 increased and the tetragonal phase of zirconia was clearly generated. The highest acid strength of 20 wt% tungsten oxide zirconia catalyst was confirmed by NH3-TPD analysis and the result was correlated to the highest catalytic activity of the esterification reaction.
Keywords: Biodiesel; Esterification; Tungsten oxide zirconia; Heterogeneous catalyst; Free fatty acid

Neuza Mariko Aymoto Hassimotto, Maria Ines Genovese, Franco Maria Lajolo, Antioxidant capacity of Brazilian fruit, vegetables and commercially-frozen fruit pulps, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 4 May 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2009.04.002.
(http://www.sciencedirect.com/science/article/B6WJH-4W6XVWY-1/2/c3210c781868c1e5d10003b97afba08b)

Abstract:
Several epidemiological and research studies suggest that a high intake of foods rich in natural antioxidants increases the antioxidant capacity of the plasma and reduces the risk of some kinds of cancers, heart diseases, and stroke. These health benefits are attributed to a variety of constituents, including vitamins, minerals, fiber, and numerous phytochemicals, such as flavonoids. Thus, in addition to measuring the composition of the usual macronutrients and micronutrients, it seems important to also measure the antioxidant capacity of foods. For this purpose, 28 foods including fruits, vegetables and commercially-frozen fruit pulps were analyzed for antioxidant capacity. The antioxidant capacity of the foods varied from 0.73 to 19.8 [mu]mol BHT equiv/g. The highest values were observed for wild mulberries (19.8 [mu]mol BHT equiv/g), acai fruit pulp (18.2 [mu]mol BHT equiv/g) and watercress (9.6 [mu]mol BHT equiv/g). The antioxidant capacities are only indicative of the potential of the bioactive compounds; however, these data are important to explore and understand the role of fruit, vegetables and other foods in health promotion.
Keywords: Flavonoids; Anthocyanin; Phenolic compound; Antioxidant capacity; Food analysis; Food composition; Brazilian foods; 7 IFDC

Surindra Suthar, Vermicomposting of vegetable-market solid waste using Eisenia fetida: Impact of bulking material on earthworm growth and decomposition rate, Ecological Engineering, Volume 35, Issue 5, May 2009, Pages 914-920, ISSN 0925-8574, DOI: 10.1016/j.ecoleng.2008.12.019.
(http://www.sciencedirect.com/science/article/B6VFB-4VJBCJC-3/2/e470fb23e8388cece988d8e2637bd94d)
Abstract:
Vegetable-market solid waste is produced in millions of tones in urban areas and creates a problem of safe disposal. The aim of this study was to convert vegetable solid waste (VW) amended with wheat straw (WS), cow dung (CD), and biogas slurry (BGS) into vermicompost using earthworm Eisenia fetida. VW was mixed in bulky materials (WS, CD, and BGS) in different ratios to produce eight different combinations for laboratory screening of wastes for 15 weeks. The vermicomposting caused a decrease in organic C (12.7-28%) and C:N ratio (42.4-57.8%), while increase in total N (50.6-75.8%), available P (42.5-110.4%), and exchangeable K (36.0-78.4%) contents. Waste mineralization and humification rates were higher in bedding those containing easy digestible bulky agents, i.e., BGS and CD. Worm-processed material obtained from BGS:VW (1:2) vermibed showed the higher total N (31.3 g kg-1), available P (8.7 g kg-1) and exchangeable K (20.7 g kg-1) contents. The nutrient-rich vermicompost with acceptable C:N ratio ranges (>=1:20) indicates its agronomic potentials. Waste mixtures also supported the earthworm growth and reproduction rates in vermibeds. The results indicated that vermicomposting can be an efficient technology to convert negligible vegetable-market solid wastes into nutrient-rich biofertilizer if mixed with bulking materials in appropriate ratios.
Keywords: Vermicompost; Crop residues; Cow dung; Vegetable solid waste; Eisenia fetida; Cocoon; Urban solid wastes

Zofia Lisiewska, Piotr Gebczynski, Emilia Bernas, Waldemar Kmiecik, Retention of mineral constituents in frozen leafy vegetables prepared for consumption, Journal of Food Composition and Analysis, Volume 22, Issue 3, May 2009, Pages 218-223, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.11.015.
(http://www.sciencedirect.com/science/article/B6WJH-4VFC7XB-1/2/9070d9eccc3a4d688cadd2af1cee1dda)
Abstract:
The content of ash, P, K, Ca, Mg, Na, Fe, Zn, Mn, Cu, Cr and Ni was compared in kale, spinach and New Zealand spinach: fresh, frozen and prepared for consumption. The investigation covered composition of the raw vegetables; the vegetables blanched in water before freezing (the

traditional method of freezing); the vegetables cooked in brine (the modified method of freezing); and frozen products after 12 months of refrigerated storage. These products were prepared for consumption: either by cooking the products obtained by the traditional method in brine; or by defrosting and heating frozen vegetables obtained by modified method to consumption temperature in a microwave oven. The smallest losses caused by blanching were usually found in spinach and the highest in kale. Changes caused by cooking did not always exceed those noted after blanching. When compared with the raw vegetables, frozen products prepared for consumption contained significantly less potassium, magnesium and - with the exception of New Zealand spinach - phosphorus and copper. There was also a decrease in calcium, but only in kale; and in chromium and nickel, but only in New Zealand spinach. With regard to the remaining elements there was no consistent pattern. In products obtained by the modified method, the content of analysed constituents was greater in almost every case compared with that obtained using the traditional method; however, not all the differences were statistically significant.
Keywords: Leafy vegetables; Spinach; Kale; New Zealand spinach; Mineral composition; Pre-treatment; Freezing; Preparing for consumption; Nutrient retention after processing; Food quality; Food analysis; Food composition

G.P. Moreda, J. Ortiz-Canavate, F.J. Garcia-Ramos, M. Ruiz-Altisent, Non-destructive technologies for fruit and vegetable size determination - A review, Journal of Food Engineering, Volume 92, Issue 2, May 2009, Pages 119-136, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.11.004.
(http://www.sciencedirect.com/science/article/B6T8J-4V0MJ17-1/2/acda936e33cd2e0a3827132d386e7dc9)
Abstract:
Here, we review different methods for non-destructive horticultural produce size determination, focusing on electronic technologies capable of measuring fruit volume. The usefulness of produce size estimation is justified and a comprehensive classification system of the existing electronic techniques to determine dimensional size is proposed. The different systems identified are compared in terms of their versatility, precision and throughput. There is general agreement in considering that online measurement of axes, perimeter and projected area has now been achieved. Nevertheless, rapid and accurate volume determination of irregular-shaped produce, as needed for density sorting, has only become available in the past few years. An important application of density measurement is soluble solids content (SSC) sorting. If the range of SSC in the batch is narrow and a large number of classes are desired, accurate volume determination becomes important. A good alternative for fruit three-dimensional surface reconstruction, from which volume and surface area can be computed, is the combination of height profiles from a range sensor with a two-dimensional object image boundary from a solid-state camera (brightness image) or from the range sensor itself (intensity image). However, one of the most promising technologies in this field is 3-D multispectral scanning, which combines multispectral data with 3-D surface reconstruction.
Keywords: Dimensional measurement; Fruit; Grading; Machine vision; Postharvest; Size; Sorter; Volume

E. Fountoulaki, A. Vasilaki, R. Hurtado, K. Grigorakis, I. Karacostas, I. Nengas, G. Rigos, Y. Kotzamanis, B. Venou, M.N. Alexis, Fish oil substitution by vegetable oils in commercial diets for gilthead sea bream (Sparus aurata L.); effects on growth performance, flesh quality and fillet fatty acid profile: Recovery of fatty acid profiles by a fish oil finishing diet under fluctuating water temperatures, Aquaculture, Volume 289, Issues 3-4, 16 April 2009, Pages 317-326, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2009.01.023.
(http://www.sciencedirect.com/science/article/B6T4D-4VJBTM5-1/2/b13dd81c9f5619818861994abcb56d5c)

Abstract:
The effects of long term feeding (6 months) of commercial diets with low fish meal content and high levels of vegetable oils (69% fish oil substitution level) were determined in gilthead sea bream (110 g). A control diet containing South American fish oil (FO) was evaluated against feeds with either soybean oil (SO), palm oil (PO) or rapeseed oil (RO). Afterwards, all fish were fed a fish oil finishing diet to determine the progressive recovery of the fillet fatty acid profiles.
The results showed that growth and feed utilization in gilthead sea bream are not affected by fish oil substitution with soybean and rapeseed oil, contrary to palm oil inclusion. Flesh and liver docosahexaenoic acid (DHA) and arachidonic acid (ArA) contents were reduced to a lower degree than their reduction in the diet, whereas eicosapentaenoic (EPA) reduction was more pronounced in both tissues. Sensory analysis revealed no difference in the organoleptic characteristics of the dietary groups. However, low acceptance scores were calculated for all treated groups. No histological alterations were seen in gut tissue but liver of the PO group showed intense lipid accumulation. Re-feeding with a fish oil finishing diet for 120 days was not adequate for restoration of DHA, ArA and EPA. Linoleic (LA) and oleic acid (OA) were retained even after 120 days re-feeding with the fish oil diet.
Keywords: Fish oil replacement; Palm oil; Flesh quality; n-3 HUFA; Gilthead sea bream; Sparus aurata

Lisia Senger Huber, Rosemary Hoffmann-Ribani, Delia B. Rodriguez-Amaya, Quantitative variation in Brazilian vegetable sources of flavonols and flavones, Food Chemistry, Volume 113, Issue 4, 15 April 2009, Pages 1278-1282, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.08.030.
(http://www.sciencedirect.com/science/article/B6T6R-4T72X25-2/2/338972a9c90e87244fe098b81c779311)
Abstract:
Reliable data on the levels of flavonoids in foods are necessary to identify sources and establish better the association between consumption and incidence of diseases. The objective of this work was to determine the flavonols and flavones of major vegetable sources in Brazil, compare with data obtained in different countries and evaluate possible seasonal and processing effects. Quercetin was the most widely distributed flavonol in the vegetables analysed, onions, kale and rucula being the richest sources. Kaempferol had the highest level in rucula. Apigenin was found only in parsley, at high concentration. The flavonoid contents tended to be higher in the summer, but the difference was statistically significant only for quercetin in curly lettuce and kale. Dehydrated onion had widely varying within-brand and between-brand quercetin contents, indicating lack of quality control in the processing plants. Dehydrated parsley, on the other hand, did not have significant difference in the apigenin content among four brands.
Keywords: Flavonols; Flavones; Vegetables; Seasonal effects; Processing effects

Helen Coulthard, Jackie Blissett, Fruit and vegetable consumption in children and their mothers. Moderating effects of child sensory sensitivity, Appetite, Volume 52, Issue 2, April 2009, Pages 410-415, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.11.015.
(http://www.sciencedirect.com/science/article/B6WB2-4V34D2B-1/2/35a0550727689bb96b0e054e3331ebb1)
Abstract:
A cross-sectional study was carried out to ascertain the relative contribution of food neophobia and taste sensitivity to the amount of fruit and vegetables consumed in a typical day by 73, 2-5-year-old children attending nurseries in the South Birmingham area, UK. Sensory processing, parental control, child food neophobia and fruit and vegetable (FV) consumption of both mothers and children were measured. Parental and child FV consumption in the sample were positively associated ($p < 0.001$). Moderated regression analyses showed that taste/smell sensitivity, but not

food neophobia or tactile sensitivity, moderated the relationship between maternal and child FV consumption. In particular, children who were sensitive to taste/smell stimuli ate fewer fruit and vegetables, regardless of their mothers FV consumption. This finding implies that those children, who are sensitive to taste/smell stimuli, may be less likely to model maternal FV consumption. For these children, a more gradual route to encouraging acceptance, with attention to small sensory changes in foods, may be necessary to increase FV consumption.
Keywords: Fruit and vegetable consumption; Food neophobia; Sensory sensitivity; Parental control

Georgianna Tuuri, Michael Zanovec, Linda Silverman, James Geaghan, Melinda Solmon, Denise Holston, Annrose Guarino, Heli Roy, Ellen Murphy, 'Smart Bodies' school wellness program increased children's knowledge of healthy nutrition practices and self-efficacy to consume fruit and vegetables, Appetite, Volume 52, Issue 2, April 2009, Pages 445-451, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.12.007.
(http://www.sciencedirect.com/science/article/B6WB2-4V70R5P-5/2/9e2d4989145857335335240bc4f7f8c6)
Abstract:
Diets rich in fruit and vegetables are important for long-term health yet children frequently do not like these foods. The 'Smart Bodies' school wellness program sought to increase children's knowledge of healthy nutritional practices, improve psychosocial variables associated with eating fruit and vegetables, and develop preferences for these foods. A randomized controlled intervention trial was conducted in 14 low-income, urban, public elementary schools (seven pairs). Data from 278 fourth and 282 fifth graders (234 boys, 326 girls; 82% Black, 10% White, 1% Hispanic, 5% Asian, 2% Other) were examined using multi-level modeling. The 12-week intervention program included participation in an interactive wellness exhibit and a classroom curriculum that emphasized consumption of fruit and vegetables. After the intervention, children that participated in the 'Smart Bodies' program had greater nutrition knowledge and expressed more confidence that they could eat fruit instead of a favorite dessert, drink fruit juice and consume the recommended number of fruits and vegetables servings each day. Preferences for fruit and vegetables did not change as a result of participating in the program. These findings demonstrate that the 'Smart Bodies' school-based wellness intervention positively impacted children's nutrition knowledge and psychosocial variables associated with consuming fruit and vegetables.
Keywords: Children; School wellness; Nutrition knowledge; Self-efficacy; Fruit; Vegetables; Multi-level modeling; Factor analysis; Randomized controlled trial

Michael G. Tordoff, Mari A. Sandell, Vegetable bitterness is related to calcium content, Appetite, Volume 52, Issue 2, April 2009, Pages 498-504, ISSN 0195-6663, DOI: 10.1016/j.appet.2009.01.002.
(http://www.sciencedirect.com/science/article/B6WB2-4VCNP44-2/2/7983ab147e4815df6fc97b33d1a0c737)
Abstract:
In the U.S. and Europe, most people do not consume the recommended amounts of either calcium or vegetables. We investigated whether there might be a connection; specifically, whether the taste of calcium in vegetables contributes to their bitterness and thus acceptability. We found a strong correlation between the calcium content of 24 vegetables, based on USDA Nutrient Database values, and bitterness, based on the average ratings of 35 people ($r = 0.93$). Correlations between the content of other nutrients and bitterness were lower and most were not statistically significant. To assess whether it is feasible that humans can detect calcium in vegetables we tested two animal models known to display a calcium appetite. Previous work indicates that calcium solutions are preferentially ingested by PWK/PhJ mice relative to C57BL/6J mice, and by rats deprived of dietary calcium relative to replete controls. In choice tests between collard greens, a high-calcium vegetable, and cabbage, a low-calcium vegetable, the calcium-

favoring animals had higher preferences for collard greens than did controls. These observations raise the possibility that the taste of calcium contributes to the bitterness and thus acceptability of vegetables.
Keywords: Taste; Nutrition; Sensory evaluation; Calcium appetite

Gertrude G. Zeinstra, M.A. Koelen, F.J. Kok, C. de Graaf, Children's hard-wired aversion to pure vegetable tastes. A `failed' flavour-nutrient learning study, Appetite, Volume 52, Issue 2, April 2009, Pages 528-530, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.11.006.
(http://www.sciencedirect.com/science/article/B6WB2-4V0MJ5G-2/2/4731b146126906f6c383b68b8d24a660)
Abstract:
Conditioning is an important mechanism for establishing food preferences. Although the basic principles for conditioning are well-known, less is known about the conditions under which this type of learning takes place. This paper aims to add to the knowledge of the essential conditions for flavour-nutrient learning with vegetable flavours. We describe a study which aimed to investigate whether flavour-nutrient learning is effective in increasing 7-8-year-old children's preference for vegetables. Their preference for, and consumption of, two different vegetable drinks was measured before and after a 14-day-conditioning period, using a within-subject design. Flavour-nutrient learning could not occur, due to insufficient consumption during the conditioning period: 2.4 g (S.D. = 5.6) for the high energy (HE) drink and 3.0 g (S.D. = 9.3) for the low energy (LE) drink. The high taste intensity may have caused the insufficient consumption. We hypothesize that the pure taste of vegetables in itself is not acceptable. Mixing vegetables with other foods may lead to gradual acceptance of vegetables through flavour-flavour and flavour-nutrient learning. Future flavour-nutrient learning studies with children should use less intense vegetable flavours.
Keywords: Energy conditioning; Children; Vegetables; Food preferences

Xiao-Zong Song, Chang-Xing Zhao, Xiao-Lan Wang, Ji Li, Study of nitrate leaching and nitrogen fate under intensive vegetable production pattern in northern China, Comptes Rendus Biologies, Volume 332, Issue 4, April 2009, Pages 385-392, ISSN 1631-0691, DOI: 10.1016/j.crvi.2008.11.005.
(http://www.sciencedirect.com/science/article/B6X1F-4VH335J-1/2/e0d590cb3e64ac9c77b5c70560922d31)
Abstract:
Because of intensive vegetable production in plastic greenhouses in northern China, the potential risk of nitrate leaching to groundwater is increasingly apparent, threatening ecosystem services and the sustainability of food production. In the present work, nine drainable lysimeters were installed into vegetable fields, with in-situ loamy soils, in Shouguang City of the north China vegetable base. The experiments were conducted to quantify the magnitude and variability of nitrate leaching to groundwater and to access the fate of total fertilizer-N inputs in the area. The results obtained indicated that: under local conventional agronomic practices, there is a high discrepancy in leaching nitrate-N concentration (ranging from 17 to 457 mg[thin space]L-1), and nitrate losses (152-347 kg[thin space]N[thin space]ha-1) were observed from 1-m soil profiles in the field. Meanwhile, high fertilizer N application resulted in low N efficiency, with only (33.0+/-13)% (mean+/-S.D.) of input N absorbed by the crops, while additionally nearly half of the total inputs of N were unaccounted in a partial N balance sheet. It is concluded that groundwater pollution associated with greenhouse-based vegetable production had been confirmed in Shouguang, adversely affecting water quality and leading to serial agro-ecological problems. To cite this article: X.-Z. Song et al., C. R. Biologies 332 (2009).
Keywords: Nitrate leaching; Groundwater; Nitrate concentration; Nitrogen balance; Intensive vegetable production

G. Wang, M.E. McGiffen Jr., E.J. Ogbuchiekwe, L. Butler, Economic return of purple and yellow nutsedge management in vegetable production of southern California, Crop Protection, Volume 28, Issue 4, April 2009, Pages 319-326, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.11.011.
(http://www.sciencedirect.com/science/article/B6T5T-4V64YHC-1/2/daad26289abd53200c6c4810557da85e)
Abstract:
The economic return of a standard low desert crop rotation of spring cantaloupe (Cucumis melo L.)-summer fallow-winter broccoli (Brassica oleracea L.) infested with purple nutsedge (Cyperus rotundus L.) or yellow nutsedge (Cyperus esculentus L.) was compared to alternative rotations that included: cultivation (hand-hoeing), a smother crop of wheat (Triticum aestivum L.) and sudangrass (Sorghum sudanense L.), a smother crop of wheat followed by solarization, and sweet corn (Zea mays L.) with halosulfuron application followed by sudangrass in southern California from 2001 to 2003. After two growing seasons, broccoli was planted without any nutsedge control. Purple and yellow nutsedge tubers increased dramatically in the untreated plots and purple nutsedge reduced crop yield and economic returns. Solarization was the most effective treatment for reducing purple nutsedge populations, but had a negative economic return above variable costs. Multiple hand-hoeing also controlled purple nutsedge effectively and resulted in a net return of $3069/ha. The halosulfuron and the smother crop treatments did not control purple nutsedge and had negative economic returns. Yellow nutsedge did not affect crop yield significantly during the course of the experiment. All methods controlled yellow nutsedge effectively, especially when there were no crops growing in the summer. However, the economic return of the treatments varied significantly. The net return of the cultivation treatment in the yellow nutsedge field was $9219/ha, while the net returns of the halosulfuron and smother crop treatments were negative. When the final broccoli crop was grown without nutsedge control from October 2003 to January 2004, solarization was the only treatment to be profitable in the purple nutsedge field. The cultivation and the solarization treatments had the highest economic return in the yellow nutsedge field, while the only treatment with negative economic return in the yellow nutsedge field was the smother crop treatment. For both purple and yellow nutsedge, planting sudangrass in the summer had the lowest broccoli yield and economic return.
Keywords: Cost-benefit analysis; Crop rotation; Sustainable agriculture

Christine Hoefkens, Isabelle Sioen, Stefaan De Henauw, Isabelle Vandekinderen, Katleen Baert, Bruno De Meulenaer, Frank Devlieghere, John Van Camp, Development of vegetable composition databases based on available data for probabilistic nutrient and contaminant intake assessments, Food Chemistry, Volume 113, Issue 3, EuroFIR Special Issue: The role of food composition data in improving quality, healthiness and safety of European diets, 1 April 2009, Pages 799-803, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.06.049.
(http://www.sciencedirect.com/science/article/B6T6R-4SVV8NX-1/2/8af34acf1bb493332bd3cb8c549c02a9)
Abstract:
Dietary intake assessment can be considered as a two-step process consisting of collecting and evaluating food composition data, and combining these data with food consumption data. The purpose of this study was to develop databases of nutrient and contaminant concentrations in organic and conventional vegetables and potatoes based on internationally available secondary data. Databases, as described here, are important in (1) comparing the composition of similar foods (organic versus conventional) and (2) assessing probabilistically the combined intake of nutrients and contaminants when nutritional and toxicological dimensions of food consumption are being studied simultaneously.
Keywords: Nutrient database; Contaminant database; Vitamins; Minerals; Secondary plant metabolites; Nitrate; Heavy metals; Pesticides; Vegetables; Organic; Variability

M. Graca Dias, M. Filomena G.F.C. Camoes, Luisa Oliveira, Carotenoids in traditional Portuguese fruits and vegetables, Food Chemistry, Volume 113, Issue 3, EuroFIR Special Issue: The role of food composition data in improving quality, healthiness and safety of European diets, 1 April 2009, Pages 808-815, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.08.002.
(http://www.sciencedirect.com/science/article/B6T6R-4T5TPSB-C/2/cad2eab4c89d15c04590aede9de4b013)
Abstract:
Carotenoids, [alpha]-carotene, [beta]-carotene, [beta]-cryptoxanthin, lycopene, lutein and zeaxanthin, were determined in 10 varieties of five fruit species (orange, pear, peach, apple and cherry) and five varieties of four species of vegetables (Portuguese coles, turnip greens, purslane, leaf beet and beetroot leaves) cultivated in Portugal and country traditional, the fruits being of protected designation of origin or of protected geographical indication. The determination was done by high performance liquid chromatography, using two metal free reverse phase columns, an organic mobile phase based on acetonitrile, methanol and dichloromethane and a UV-vis photodiode array detector. Identification was done by retention time and spectral analysis and quantification was based on peak area at 450 nm by external calibration. The analysed leafy vegetables are a very good source of lutein (0.52-7.2 mg/100 g) and [beta]-carotene (0.46-6.4 mg/100 g) while the analysed fruits have a considerably lower content of carotenoids (lutein, 0.0032-0.16 mg/100 g and [beta]-carotene, 0.010-0.17 mg/100 g) and a complex and variable qualitative and quantitative carotenoid composition. Most estimated relative measurement expanded uncertainties were between 0.10 and 0.31. Results indicate that the carotenoid content of the analysed items could vary with species, varieties, geographical place of production (region, site) and time of harvest, and should be addressed in the eventual production of data for food composition data bases.
Keywords: Carotenoids; Fruits; Vegetables; Natural variability; HPLC; PDO/PGI; Traditional

Shela Gorinstein, Zenon Jastrzebski, Hanna Leontowicz, Maria Leontowicz, Jacek Namiesnik, Kasia Najman, Yong-Seo Park, Buk-Gu Heo, Ja-Yong Cho, Jong-Hyang Bae, Comparative control of the bioactivity of some frequently consumed vegetables subjected to different processing conditions, Food Control, Volume 20, Issue 4, April 2009, Pages 407-413, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.07.008.
(http://www.sciencedirect.com/science/article/B6T6S-4T0MMFV-5/2/0cf41395d7a24a9182005a0543f9c28a)
Abstract:
The main aim of this investigation was to find processing conditions and to control them, which maximally preserve bioactive compounds and antioxidant activity of garlic and onions. Garlic, white and red onions were subjected to bleaching and boiling. The contents of polyphenols, flavonoids, flavanols, tannins, corresponding antioxidant activities and their correlation coefficients were determined in various methanol and acetone extracts. The antioxidant activity was determined by 2, 2-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS), 1,1-diphenyl-2-picrylhydrazyl (DPPH), Ferric-reducing/antioxidant power (FRAP) and Cupric reducing antioxidant capacity (CUPRAC) antioxidant assays. It was found that bleaching for 90'' most fully preserves polyphenols (8.25, 9.75 and 11.98 vs. 9.00, 10.52 and 15.87 mg GAE/g DW and the level of antioxidant activity - 8.82, 22.50 and 23.90 vs. 9.00, 23.05 and 24.30 [mu]M TE/g DW of DPPH in extracts of treated samples with 100% of methanol vs. raw garlic, white and red onions, respectively. In conclusion, comparative control shows that bleaching for 90'' of all studied vegetables most fully preserves contents of bioactive compounds and the level of antioxidant activity. Extraction of bioactive compounds with 100% methanol was more effective than with 50% methanol and 100% acetone.
Keywords: Garlic; Onions; Bioactive compounds; Antioxidant activity; Processing conditions; Control

Zorka Knezevic, Maja Serdar, Screening of fresh fruit and vegetables for pesticide residues on Croatian market, Food Control, Volume 20, Issue 4, April 2009, Pages 419-422, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.07.014.
(http://www.sciencedirect.com/science/article/B6T6S-4T3M66G-1/2/3d4c6e8f88033c2784602f6fe5793db7)
Abstract:
The aim of this study was to investigate pesticide residues in market foods in Croatia. A total of 240 samples of fresh fruit and vegetables from import and domestic production were analyzed. Pesticide resides were determined by gas chromatography with mass selective detector (GC-MSD). Sample extract was cleaned up using gel permeation chromatography (GPC). In 66.7% of the samples no residues were found, 25.8% of samples contained pesticide residues at or below MRL, and 7.5% of samples contained pesticide residues above MRL. Most frequently found pesticides were imazalil (found in 35 samples) and chlorpyrifos (found in 24 samples). The findings of this study pointed to the following recommendations: the need for a monitoring program for pesticide residues in food crops, especially imported food crops.
Keywords: Pesticides; Fruit; Vegetables

Jorge Gutierrez, Paula Bourke, Julien Lonchamp, Catherine Barry-Ryan, Impact of plant essential oils on microbiological, organoleptic and quality markers of minimally processed vegetables, Innovative Food Science & Emerging Technologies, Volume 10, Issue 2, April 2009, Pages 195-202, ISSN 1466-8564, DOI: 10.1016/j.ifset.2008.10.005.
(http://www.sciencedirect.com/science/article/B6W6D-4TTHWD5-1/2/8fe1ffa9fdcda71a005448243edc7b3a)
Abstract:
The objectives of this study were to evaluate the efficacy of plant essential oils (EOs) for control of the natural spoilage microflora on ready-to-eat (RTE) lettuce and carrots whilst also considering their impact on organoleptic properties. Initial decontamination effects achieved using EOs were comparable to that observed with chlorine and solution containing oregano recorded a significantly lower initial TVC level than the water treatment on carrots ($p < 0.05$). No significant differences were found between the EO treatments and chlorine considering gas composition, color, texture and water activity of samples. The sensory panel found EO treatments acceptable for carrots throughout storage, while lettuce washed with the EO solutions were rejected for overall appreciation by Day 7. Correlating microbial and sensory changes with volatile emissions identified 12 volatile quality markers. Oregano might be a suitable decontamination alternative to chlorine for RTE carrots, while the identification of volatile quality markers is a useful complement to sensory and microbiological assessments in the monitoring of organoleptic property changes and shelf-life of fresh vegetables.Industrial relevance
There is industrial demand for natural alternatives to chlorine, which is commonly used for decontamination of fresh produce but which has limitations with respect to antimicrobial efficacy and possible formation of carcinogenic compounds in water. Plant essential oils have proven antimicrobial and other bioactive properties, however their usefulness in foods can be mitigated by their high sensory impact. This study examined the application of EOs for fresh produce decontamination addressing control of spoilage microflora and improving shelf-life characteristics whilst also considering the impact on organoleptic properties. The effectiveness of oregano as a decontamination treatment was comparable with that of chlorine. Carrot discs treated with the EO regimes were acceptable in terms of sensory quality and appreciation, therefore oregano could offer a natural alternative for the washing and preservation of fresh produce. Combining EOs with other natural preservatives might minimize doses and reduce the impact on organoleptic properties of fresh vegetables.
Keywords: Essential oils; Spoilage; Sensory; Volatiles; Lettuce; Carrot; Ready-to-eat

Halina Polata, Alina Wilinska, Jolanta Bryjak, Milan Polakovic, Thermal inactivation kinetics of vegetable peroxidases, Journal of Food Engineering, Volume 91, Issue 3, April 2009, Pages 387-391, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.09.017.
(http://www.sciencedirect.com/science/article/B6T8J-4TKPV7J-2/2/db23e4788bd31f8ee9e11ae4d61842f2)
Abstract:
Thermal stability of peroxidases present in raw vegetable mixtures was investigated in order to identify adequate mechanisms and corresponding kinetic models of inactivation. Inactivation experiments were carried out for each material at five different temperatures which were from the ranges of 58-74 [degree sign]C for broccoli and potato juices and 62-78 [degree sign]C for carrot juice. Using the multitemperature evaluation of inactivation data, a simple isozyme model was verified for the inactivation of broccoli peroxidase. A combined three-reaction mechanism, which assumed simple irreversible inactivation for one isoform and Lumry-Eyring mechanism for the other one, was identified for carrot and potato peroxidases.
Keywords: Peroxidase; Thermal processing; Vegetable juice; Enzyme stability; Inactivation kinetics; Multitemperature modelling

E. Sabah, M. Majdan, Removal of phosphorus from vegetable oil by acid-activated sepiolite, Journal of Food Engineering, Volume 91, Issue 3, April 2009, Pages 423-427, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.09.020.
(http://www.sciencedirect.com/science/article/B6T8J-4TKPV7J-8/2/c43dfedd9c35ad3420d7d4541ba94e9c)
Abstract:
The adsorption of phosphorus (P) from rapeseed oil on acid-activated sepiolite (AAS) was investigated for different AAS dosages and bleaching temperatures. The P concentration in the oil was reduced from 29.7 to 1.11 mg/kg at the optimal conditions: bleaching temperature -100 [degree sign]C, AAS dosage -1.5%. The adsorption capacity of AAS in relation to P and mean adsorption energy were calculated according to Langmuir and Freundlich models and the former was found to be better. The negative values of free energy of adsorption () show that the adsorption is spontaneous, whereas the positive value of the entropy of adsorption () probably results from the reorganisation in the internal structure of the adsorbent appearing during adsorption of P on AAS. The low value of adsorption enthalpy () indicates a relatively weak adsorbate-adsorbent affinity probably due to hydrogen bond formation. The division of phospholipids and phosphates between external surface and micropores of the sepiolite is suggested.
Keywords: Adsorption; Bleaching; Phosphorus; Sepiolite; Vegetable oil

Jayna M. Dave, Alexandra E. Evans, Ruth P. Saunders, Ken W. Watkins, Karin A. Pfeiffer, Associations among Food Insecurity, Acculturation, Demographic Factors, and Fruit and Vegetable Intake at Home in Hispanic Children, Journal of the American Dietetic Association, Volume 109, Issue 4, April 2009, Pages 697-701, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.12.017.
(http://www.sciencedirect.com/science/article/B758G-4VXMFT2-P/2/b916deee6d9fcf64824309c93be2bc25)
Abstract:
The purpose of this cross-sectional pilot study was to examine associations between food insecurity, acculturation, demographic factors, and children's fruit and vegetable intake among a sample of Hispanic children ages 5 to 12 years. A convenience sample of 184 parents of low socioeconomic status completed one-time, self-administered questionnaires assessing demographic information, acculturation, and food insecurity in the spring of 2006. In addition,

children's fruit and vegetable intake at home was measured using a validated seven-item index. Parents were recruited through local elementary schools in San Antonio, TX. Pearson and Spearman correlations were used to examine the associations between the variables. t tests were used to explore the differences in means of children's fruit and vegetable intake at home for acculturation and food insecurity levels. Statistical significance was set at $P<0.05$. Significant correlations were found between demographic variables, acculturation, food insecurity, and children's fruit and vegetable intake at home. The overall mean fruit and vegetable intake at home was 1.04+/-0.63 (mean+/-standard deviation) servings per day. Higher rates of acculturation and higher rates of food insecurity were associated with lower fruit and vegetable intake at home. The findings reported in this study suggest a need for culturally tailored interventions targeting Hispanic children because fruit and vegetable intake at home among Hispanic children was low, regardless of the level of acculturation or food insecurity.

Sun Tay Choi, Donald J. Huber, Differential sorption of 1-methylcyclopropene to fruit and vegetable tissues, storage and cell wall polysaccharides, oils, and lignins, Postharvest Biology and Technology, Volume 52, Issue 1, April 2009, Pages 62-70, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.11.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4V87DKR-1/2/3fd6d6569707a53a89891909ca506e34)
Abstract:
This study was designed to determine the nature and multiplicity of non-specific 1-methylcyclopropene (1-MCP) sorption sites in fruit and vegetable tissues. 1-MCP sorption rates and capacities were measured for plant tissues, cell wall polysaccharides, starch, oils, and lignins sealed in 130 mL jars and provided with 18.6 [mu]L L-1 gaseous 1-MCP (SmartFresh(TM) Technology). Significant variation was noted in the sorption properties of the different plant tissues, with both sorption rates and capacities being notably higher for external/exocarp tissues compared with internal tissues. Among the tissues examined, avocado exocarp, mesocarp and seed coat, plantain exocarp, and asparagus stem tissues exhibited the highest sorption rates and capacities. Sorption was markedly reduced in response to tissue drying but recovered to different extents in response to rehydration. Avocado mesocarp treated to deplete oil content showed reduced 1-MCP sorption rate and capacity whereas the exocarp was negligibly affected, indicating that multiple cellular components contribute to non-specific sorption. Starch and the cell wall polysaccharides cellulose, polygalacturonic acid and xyloglucan showed low sorption properties and were unaffected by polymer hydration. In contrast, high methoxy pectic polymers and lignins were strong molecular sinks for 1-MCP sorption. Sorption to pectin was dependent on the esterified methyl moiety, as de-esterification reduced sorption rate and capacity to levels comparable with polygalacturonic acid. Plantain-exocarp and spruce lignins, and avocado and safflower oils exhibited the highest initial sorption rates. For oils, rapid initial sorption was followed by establishment of stable equilibrium between gaseous and partitioned 1-MCP. Compared with oils, the binding capacity of lignins was markedly higher and irreversible. The data collectively demonstrate that 1-MCP sorbs to several cellular targets and that hydrophobic components are preferred sorption sinks. The highly disparate 1-MCP sorption rates and capacities of the different fruit and vegetable tissues examined are consistent with compositional differences in lignin, methylated pectin, and oil levels.
Keywords: 1-Methylcyclopropene; Sorption; Binding; Avocado; Plantain; Asparagus; Lignin; Pectin; Esterification; Oil

Li Xiu-Qin, Ji Chao, Sun Yan-Yan, Yang Min-Li, Chu Xiao-Gang, Analysis of synthetic antioxidants and preservatives in edible vegetable oil by HPLC/TOF-MS, Food Chemistry, Volume 113, Issue 2, 15 March 2009, Pages 692-700, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.072.

(http://www.sciencedirect.com/science/article/B6T6R-4T3DD19-1/2/a15ef08e8341c9f161699932b50e3e8b)
Abstract:
The application of high performance liquid chromatography time-of-flight mass spectrometry (HPLC/TOF-MS) for the qualitation and quantitation of 11 synthetic antioxidants and preservatives in edible vegetable oil samples is reported here. The qualitation by HPLC/TOF-MS is accomplished with the accurate mass of the deprotonated molecules [M-H]-, along with the accurate mass of their main fragment ion. In order to obtain sufficient sensitivity for quantitation purposes (using deprotonated molecule), segment programme of fragmentor voltage is designed in negative ion mode. The mass accuracy typically obtained is routinely better than 5 ppm. The 11 compounds behave linearly in the 0.05-5.0 mg/kg concentration range, with correlation coefficient >0.997. The recoveries at the tested concentrations of 0.1-2.0 mg/kg are 65.8-106.9%, with coefficients of variation <8.1%. The method illustrated is suitable for routine qualitative and quantitative analyses of synthetic antioxidants and preservatives in edible vegetable oils.
Keywords: Synthetic antioxidants; Synthetic preservatives; Analysis; Edible vegetable oil; HPLC/TOF-MS

Laura Benedito-Palos, Juan C. Navarro, Azucena Bermejo-Nogales, Alfonso Saera-Vila, Sadasivam Kaushik, Jaume Perez-Sanchez, The time course of fish oil wash-out follows a simple dilution model in gilthead sea bream (Sparus aurata L.) fed graded levels of vegetable oils, Aquaculture, Volume 288, Issues 1-2, 2 March 2009, Pages 98-105, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2008.11.010.
(http://www.sciencedirect.com/science/article/B6T4D-4TX790G-5/2/505b30e453eacbdb19239f5ed80d8824)
Abstract:
The aim of the study was to determine whether changes in the tissue fatty acid (FA) profile follows a simple test dilution model after changing the dietary oil sources in gilthead sea bream. A 14-month trial was conducted with juvenile fish of 18 g initial body weight fed either a fish oil-based diet (FO diet) or vegetable oils replacing 33% (33VO) and 66% (66VO) of fish oil. The trial included 3 months feeding a fish oil finishing diet to follow the restoration of the FA profile with the FO diet. Fish oil replacement with/without a finishing phase of fish oil re-feeding did not affect growth and all groups reached 520-531 g body weight. Changes in body composition with weight gain did not modify the FA profile of fish continuously fed FO, 33VO or 66VO diets. Increased amounts of oleic acid (18:1n-9), linoleic acid (18:2n-6) and linolenic acid (18:3n-3), in combination with reduced proportions of n-3 long chain polyunsaturated FAs, were found with the partial replacement of fish oil. Hence, multivariate component analysis highlighted a gradient of fish oil load determined by the total intake of fish oil over the entire production cycle. The simple dilution model was a good descriptor of these tissue FA changes, and excellent correlations between observed and predicted values were found at the end of finishing period in fish grow out with either 33VO or 66VO diets.
Keywords: Fish; Growth; Flesh; Fatty acids; Plant proteins

Torunn Stangeland, Siv F. Remberg, Kare A. Lye, Total antioxidant activity in 35 Ugandan fruits and vegetables, Food Chemistry, Volume 113, Issue 1, 1 March 2009, Pages 85-91, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.026.
(http://www.sciencedirect.com/science/article/B6T6R-4T0WK0W-9/2/18893361be4152354eb5c516264d8809)
Abstract:
The objective of this study was to analyse antioxidant activity (AA) in fruits and vegetables from Uganda and to investigate whether AA in traditional food is sufficiently high to prevent oxidative stress and thus combat disease. We used the FRAP (ferric reducing ability of plasma) procedure. The results showed great variation in AA, ranging from 72.3 +/- 13.5 (Syzygium cuminii seed) to

0.09 +/- 0.05 (Cucurbita maxima fruit) mmol/100 g fresh weight (FW). We estimated serving sizes and determined the total antioxidant capacity (TDAC) per day of three traditional Ugandan diets. The dietary plants with highest AA per serving size were pomegranate (Punica granatum), Canarium schweinfurthii, guava (Psidium guajava), mango (Mangifera indica) and tree tomato (Cyphomandra betacea) with values ranging from 8.91 to 3.00 mmol/serving. Of the traditional diets, the central/eastern (C/E) and the western (W) diets had almost the same AA (9.31-9.78 and 9.75 mmol/day), while the northern (N) diet had an AA of 7.50-8.02 mmol/day.
Keywords: Antioxidant activity; FRAP; Fruits; Vegetables; Ugandan diet; Total dietary antioxidant capacity

P.C. Abhilash, Vandana Singh, Nandita Singh, Simplified determination of combined residues of lindane and other HCH isomers in vegetables, fruits, wheat, pulses and medicinal plants by matrix solid-phase dispersion (MSPD) followed by GC-ECD, Food Chemistry, Volume 113, Issue 1, 1 March 2009, Pages 267-271, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.07.004.
(http://www.sciencedirect.com/science/article/B6T6R-4SYCR00-3/2/b614baaf8a70ee6d2474964e2f561a1f)
Abstract:
A fast, simple and inexpensive sample preparation method based on matrix solid-phase dispersion (MSPD) technique is proposed for the isolation of combined residues of hexachlorocyclohexane isomers from fruits, vegetables, grains, pulses and medicinal plants. Both extraction and clean-up were carried out in a single step and target compounds were determined by gas chromatography coupled with electron capture detection (GC-Ni63 ECD). The major factors affecting extraction yield and sensitivity, such as type of dispersant material and extraction solvent, were evaluated and optimised. Under optimised conditions, 5 g of sample matrix was dispersed with 500 mg of Florisil and blended with 1 g of anhydrous magnesium sulphate and 500 mg of sodium chloride, and transferred into a glass column containing neutral alumina (2 g) and anhydrous sodium sulphate (500 mg). The dispersed sample matrix was then eluted with 10 ml of n-hexane-ethyl acetate mixture (70:30, v/v) and repeated with another 10 ml of same solvent mixture. Recoveries of the proposed method for the spiked samples ranged from 93% to 103% and the day-to-day variability remained between 5% and 10%. The limit of detection (LOD) of [alpha]-, [beta]-, [gamma]- and [delta]- HCH was 3, 6, 4 and 5 ng g-1, respectively. Satisfactory results were obtained in the routine analysis of real samples, confirming the reliability and efficacy of this method for the analysis of HCH residues in food matrices and medicinal plants.
Keywords: Hexachlorocyclohexane; Matrix solid-phase dispersion; Food matrices; Gas chromatography

Lidia del Carmen Velazquez, Norma Beatriz Barbini, Maria Esther Escudero, Cecilia Lucero Estrada, Ana Maria Stefanini de Guzman, Evaluation of chlorine, benzalkonium chloride and lactic acid as sanitizers for reducing Escherichia coli O157:H7 and Yersinia enterocolitica on fresh vegetables, Food Control, Volume 20, Issue 3, March 2009, Pages 262-268, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2008.05.012.
(http://www.sciencedirect.com/science/article/B6T6S-4SM62D4-3/2/b54bf590f234c17d512958d600d860f0)
Abstract:
The effectiveness in the assurance of fresh vegetable microbiological quality of wash solutions containing 200 ppm free chlorine, 0.1 mg/ml benzalkonium chloride, 0.2% and 1% lactic acid was assessed on Escherichia coli O157:H7 and Yersinia enterocolitica contaminated lettuce and tomatoes. Y. enterocolitica reduction on tomatoes (5.08, 4.77 and 4.21 log after 0.2% lactic acid, 200 ppm chlorine and 0.1 mg/ml benzalkonium chloride treatments, respectively) were significantly higher than those for Y. enterocolitica on lettuce and E. coli O157:H7 on both vegetables. Antimicrobial treatment effects on bacterial counts and product quality after subsequent 7 day

storage (4 [degree sign]C and 22 [degree sign]C) were determined. No pathogens were found in natural microflora of fresh vegetables.
Keywords: Enteropathogens; Sanitation; Fresh vegetables

Rajesh Kumar Sharma, Madhoolika Agrawal, Fiona M Marshall, Heavy metals in vegetables collected from production and market sites of a tropical urban area of India, Food and Chemical Toxicology, Volume 47, Issue 3, March 2009, Pages 583-591, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.12.016.
(http://www.sciencedirect.com/science/article/B6T6P-4V75YXF-4/2/c7929a4ff741ac6bcfd49feefe2654c0)
Abstract:
Vegetables (Beta vulgaris L., Abelmoschus esculentus L. and Brassica oleracea L.) from the production and market sites of India were tested for Cu, Cd, Zn and Pb. At market sites, the mean concentration of Cu in cauliflower, and of Zn and Cd in both palak and cauliflower had exceeded the PFA standard. Zn at the production sites also exceeded the PFA standard in cauliflower. Cd concentration in vegetables tested from both production and market sites was many folds higher than the EU standard. In contrast, Pb in vegetables tested from both production and market sites was below the PFA limit, but was considerably higher than the current EU and WHO standards. Heavy metals accumulation in vegetables tested are higher at market sites than those at the crop production sites. The contributions of these vegetables to dietary intake of Cu, Zn, Cd and Pb were 13%, 1%, 47% and 9% of provisional tolerable daily intake, respectively. The study concludes that the transportation and marketing systems of vegetables play a significant role in elevating the contaminant levels of heavy metals which may pose a threat to the quality of the vegetables with consequences for the health of the consumers of locally produced foodstuffs.
Keywords: Vegetables; Heavy metals; PFA; EU; Daily intake

Erica M. Holt, Lyn M. Steffen, Antoinette Moran, Samar Basu, Julia Steinberger, Julie A. Ross, Ching-Ping Hong, Alan R. Sinaiko, Fruit and Vegetable Consumption and Its Relation to Markers of Inflammation and Oxidative Stress in Adolescents, Journal of the American Dietetic Association, Volume 109, Issue 3, March 2009, Pages 414-421, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.11.036.
(http://www.sciencedirect.com/science/article/B758G-4VPG68V-H/2/e956cae62f98cf16edbd97dffccdabb7)
Abstract: Background
Fruits and vegetables, foods rich in flavonoids and antioxidants, have been associated with lower risk of stroke, coronary heart disease, and markers of inflammation and oxidative stress in adults. Markers of inflammation and oxidative stress are predictors of coronary heart disease risk; however, it is unknown whether these markers are related to dietary flavonoid and antioxidant intake in youth.Objective
To determine whether greater intakes of fruit and vegetables, antioxidants, folate, and total flavonoids were inversely associated with markers of inflammation and oxidative stress in 285 adolescent boys and girls aged 13 to 17 years.Design
In this cross-sectional study conducted between February 1996 and January 2000, diet was assessed by a 127-item food frequency questionnaire. Height and weight measurements were obtained and a fasting blood sample drawn. Spearman partial correlation analyses evaluated the relation of intakes of fruit and vegetables, antioxidants, folate, and flavonoids with markers of inflammation (C-reactive protein, interleukin-6, tumor necrosis factor-[alpha], and 15-keto-dihydro-PGF2[alpha] metabolite and oxidative stress (urinary 8-iso prostaglandin F2[alpha], an F2-isoprostane), adjusting for age, sex, race, Tanner stage, energy intake, and body mass index.Results

Urinary F2-isoprostane was inversely correlated with intakes of total fruit and vegetables, vitamin C, beta carotene, and flavonoids. Serum C-reactive protein was significantly inversely associated with intakes of fruit (r=-0.19; P=0.004), vitamin C (r=-0.13, P=0.03), and folate (r=-0.18; P=0.004). Serum interleukin-6 was inversely associated with intakes of legumes, vegetables, beta carotene, and vitamin C. Serum tumor necrosis factor-[alpha] was inversely associated with beta carotene (r=-0.14, P=0.02) and luteolin (r=-0.15, P=0.02).Conclusion
Study results show that the beneficial effects of fruit and vegetable intake on markers of inflammation and oxidative stress are already present by early adolescence and provide support for the Dietary Guidelines for Americans 'to consume five or more servings per day' of fruits and vegetables to promote beneficial cardiovascular health.

Barbara A. Lorson, Hugo R. Melgar-Quinonez, Christopher A. Taylor, Correlates of Fruit and Vegetable Intakes in US Children, Journal of the American Dietetic Association, Volume 109, Issue 3, March 2009, Pages 474-478, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.11.022.
(http://www.sciencedirect.com/science/article/B758G-4VPG68V-V/2/962285249646fc96b73ec45326a18a56)
Abstract:
The objective of this study was to assess the quality of the current intakes of fruits and vegetables compared to the Dietary Guidelines for Americans in US children and adolescents and identify factors related to low fruit and vegetable intake. This descriptive study examined differences in fruit and vegetable intakes by age, sex, ethnicity, poverty level, body mass index, and food security status utilizing data from the 1999-2002 National Health and Nutrition Examination Survey. Six thousand five hundred thirteen children and adolescents ages 2 to 18 years, who were respondents to the 1999-2002 National Health and Nutrition Examination Survey. Mean fruit and vegetable intakes were computed using 24-hour recalls for individuals and compared using analysis of variance. Leading contributors to fruit and vegetable intake were identified using frequency analysis. Children aged 2 to 5 years had significantly higher total fruit and juice intakes than 6- to 11- and 12- to 18-year-olds. Total vegetable and french fry intake was significantly higher among 12- to 18-year-old adolescents. Regarding sex differences, boys consumed significantly more fruit juice and french fries than girls. In addition, non-Hispanic African-American children and adolescents consumed significantly more dark-green vegetables and fewer mean deep-yellow vegetables than Mexican-American and non-Hispanic white children and adolescents. Total fruit consumption also differed significantly among race/ethnicities and household income. Children and adolescents most at risk for higher intakes of energy-dense fruits and vegetables (fruit juice and french fries) were generally boys, and adolescents, at risk for overweight or overweight and living in households below 350% of the poverty level.

Tomoko Shimakawa, David W. Weingaertner, Diane M. Schmit, Mary M. Brandt, Development of downloadable and printable posters for nutrition information of raw fruits, vegetables, and fish, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 13 February 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2009.02.002.
(http://www.sciencedirect.com/science/article/B6WJH-4VKXC1K-2/2/2b836c21aef63fdf15083f0e83b5c0e2)
Abstract:
In the United States, nutrition labeling for raw fruits, vegetables, and fish is currently voluntary. In order to encourage retail stores that sell these foods to participate in the voluntary nutrition labeling program and to be compliant with the guidelines, the United States Food and Drug Administration (FDA) has developed downloadable and printable posters containing nutrition information for the 20 most frequently consumed raw fruits, vegetables, and fish in the United States. The FDA has made the posters available on its website (http://www.cfsan.fda.gov/nutinfo.html), and has urged retail stores to download and print the

posters and to display them in their stores for consumers to use in making purchase decisions. In developing these posters, FDA followed the agency's guidelines for voluntary nutrition labeling. The names and nutrition labeling values for the raw fruits, vegetables and fish are based on the updated nutrition labeling regulation published in the Federal Register on August 17, 2006, which corrected the July 25, 2006 final rule. FDA issued a Constituent Update (electronic newsletter) and contacted trade associations representing retail food stores to inform them about the posters.
Keywords: US Food and Drug Administration; Food data; Information dissemination; Nutrition education; Nutrition labeling; Fruits; Vegetables; Fish; Food composition

Chris M. Blanchard, Janet Kupperman, Phillip B. Sparling, Eric Nehl, Ryan E. Rhodes, Kerry S. Courneya, Frank Baker, Do ethnicity and gender matter when using the theory of planned behavior to understand fruit and vegetable consumption?, Appetite, Volume 52, Issue 1, February 2009, Pages 15-20, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.07.001.
(http://www.sciencedirect.com/science/article/B6WB2-4SXYFVB-1/2/5047f635d2d8d50639acfdd277d2251d)
Abstract:
A majority of Americans do not meet the recommendation to eat five servings of fruits and vegetables per day (5-A-Day). The purpose of the present study was to examine the utility of the theory of planned behavior (TPB) for understanding 5-A-Day intentions and behavior and to determine whether any of the TPB relationships were moderated by ethnicity or gender. A total of 413 participants completed a baseline TPB questionnaire and a fruit and vegetable consumption measure 2 weeks later. Path analyses showed that affective attitude and perceived behavioral control significantly predicted intention for blacks, whites, males and females (R2 ranged from .32 to .40), whereas subjective norm was a significant predictor for blacks, males, and females only. Intention significantly predicted 5-A-Day (R2 ranged from .17 to .22) for all groups. Follow-up invariance analyses showed that the subjective norm/intention relationship was significantly stronger for black compared to white students. Finally, several key beliefs were identified for all four demographic groups. Therefore, the current results suggest that the TPB may be a useful framework to utilize when developing 5-A-Day interventions.
Keywords: 5-A-Day; Theory of planned behavior; Ethnicity; Gender

Lahdheb Habiba, Bouallagui Hassib, Hamdi Moktar, Improvement of activated sludge stabilisation and filterability during anaerobic digestion by fruit and vegetable waste addition, Bioresource Technology, Volume 100, Issue 4, February 2009, Pages 1555-1560, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.09.019.
(http://www.sciencedirect.com/science/article/B6V24-4TVJJNT-2/2/f8ab32fa6e575d2196c1024e79c27d95)
Abstract:
Anaerobic co-digestion of fruit and vegetable waste (FVW) and activated sludge (AS) was investigated using anaerobic sequencing batch reactors (ASBRs). The effects of AS:FVW ratio and the organic loading rate (OLR) on digesters performances were examined. The mixtures having AS:FVW ratios of 100:00, 65:35, 35:65, by a total solid (TS) basis were operated at an hydraulic retention time (HRT) of 20 d. However, 30:70, 20:80, 15:85, 10:90 and 0:100 ratios were tested at an HRT of 10 d. To investigate effects of aerobic and anaerobic digestion on the sludge filterability, specific resistance to filtration (R) was also determined. Increasing FVW proportions in the feedstock significantly improved the biogas production yield. The reactor that was fed with a 30:70 ratio showed the highest VS removal and biogas production yield of 88% and 0.57 L g-1 VS added, respectively. The filterability results showed that the anaerobic effluent was characterised by a slightly better filterability efficiency of 1.6 x 1016 m kg-1 than 1.74 x 1016 m kg-1 of aerobic effluent. However, FVW addition improved the anaerobic co-digestion effluent filterability (5.52 x 1014 m kg-1).

Keywords: Anaerobic co-digestion; Activated sludge; Fruit and vegetable waste; Sequencing batch reactor; Filterability

C. Nendel, Evaluation of Best Management Practices for N fertilisation in regional field vegetable production with a small-scale simulation model, European Journal of Agronomy, Volume 30, Issue 2, February 2009, Pages 110-118, ISSN 1161-0301, DOI: 10.1016/j.eja.2008.08.003.
(http://www.sciencedirect.com/science/article/B6T67-4TGY47C-1/2/38291b23ba95acbf1cd8ea3d1954f1db)
Abstract:
Assessing the environmental impact of field vegetable production on a regional basis is a challenging task, since vegetable farms are often scattered. In order to use a soil-plant-environment-economics model as an assessment tool, a method is suggested that allows Best Management Practices (BMPs) for N-efficient field vegetable production to be tested and evaluated on different spatial entities. The model farm concept was exemplarily demonstrated on field vegetable production in the region of Baden-Wurttemberg, Germany. Two scenarios using different fertiliser strategies illustrate how the implementation of BMP can be evaluated at regional, sub-regional and farm level. Simulated results show how the area-wide enforcement of the Nmin method in Baden-Wurttemberg, as the first step to implement BMP, would lower the N leaching potential of field vegetable production by 66%. At sub-regional level, the results reveal that current targets stipulated by German legislation may still not be achieved in smaller areas with intensive field vegetable production.
Keywords: Field vegetable production; Nitrate leaching; Agro-ecosystem modelling; Best Management Practice; Regionalisation

Clare Narrod, Devesh Roy, Julius Okello, Belem Avendano, Karl Rich, Amit Thorat, Public-private partnerships and collective action in high value fruit and vegetable supply chains, Food Policy, Volume 34, Issue 1, Collective Action for Smallholder Market Access, February 2009, Pages 8-15, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2008.10.005.
(http://www.sciencedirect.com/science/article/B6VCB-4TYPJHB-1/2/acd25fea4c16607a5777d3fa2c969b7c)
Abstract:
Accessing developed country food markets entails meeting stringent food safety requirements. Food retailers impose protocols relating to pesticide residues, field and pack house operations, and traceability. To enable smallholders to remain competitive in such a system, new institutional arrangements are required. In particular, public-private partnerships can play a key role in creating farm to fork linkages that can satisfy market demands for food safety, while retaining smallholders in the supply chain. Furthermore, organized producer groups monitoring their own food safety standards through collective action often become attractive to buyers who are looking for ways to ensure traceability and reduce transaction costs. This paper compares the ways in which small producers of fruits and vegetables in Kenya and India have coped with increased demands for food safety from their main export markets.
Keywords: Food safety; Supply chain management; Public-private partnerships; Collective action; Public and private standards; Traceability

Linde Goetz, Harald Grethe, The EU entry price system for fresh fruits and vegetables - Paper tiger or powerful market barrier?, Food Policy, Volume 34, Issue 1, Collective Action for Smallholder Market Access, February 2009, Pages 81-93, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2008.06.005.
(http://www.sciencedirect.com/science/article/B6VCB-4T4HJKY-1/2/10e91471a253efd14dbd1ff133c6365e)
Abstract:

The EU protects EU growers of 15 kinds of fresh fruits and vegetables against international competition by the entry price system (EPS), which is designed to restrict imports below the product-specific, politically designated entry price level. This study investigates the relevance of the EPS per product and country of origin. We develop two indicators for the effectiveness of the EPS, which serve as variables in a cluster analysis identifying four classes differing in the relevance of the EPS. The relevance of the EPS is found to be heterogeneous among products as well as countries of origin. It is highest for artichokes, courgettes, cucumbers, lemons, plums and tomatoes. The influence of the EPS on apples, clementines and pears is significantly lower, and of least relevance for apricots, mandarins, oranges, peaches and nectarines and table grapes. The EPS has the greatest effect on countries which neighbour the EU, whereas it is of minor importance for exports from far-away countries with the exception of China and South Africa.
Keywords: Entry price system; Fruits and vegetables; Import policy; EU; Non-tariff barriers; Minimum import price

J.M. Katz, C.K. Winter, Comparison of pesticide exposure from consumption of domestic and imported fruits and vegetables, Food and Chemical Toxicology, Volume 47, Issue 2, February 2009, Pages 335-338, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.11.024.
(http://www.sciencedirect.com/science/article/B6T6P-4V166DW-1/2/1c17c8d18ee3dffe70cc311e5baebcda)
Abstract:
Estimates of daily dietary human exposure to 18 common pesticides found in fruits and vegetables were developed from residue data obtained from the 2003 US Food and Drug Administration's Regulatory Monitoring Program using probabilistic dietary exposure modeling. The differences between the exposures from domestic versus imported fruit and vegetable residues were compared. Of the 15 pesticides for which quantifiable residues were detected from both domestic and imported fruit and vegetable samples, domestic exposures were significantly higher for 11 pesticides while imported exposures were higher for the remaining four. The five pesticides showing the highest exposures all demonstrated greater domestic exposures than imported exposures. The mean daily exposure estimate for one pesticide, methamidophos, was above the reference dose for domestic fruits and vegetables while slightly below the reference dose for imported fruits and vegetables. Exposures to the other 17 pesticides were well below the established reference doses for domestic and imported fruits and vegetables. Exposure from pesticides in domestic foods exceeds exposure from imported foods and demonstrates that probabilistic modeling of dietary exposure provides more useful information concerning the relative risks of domestic and imported foods than that obtained from the traditional comparisons of residue detection frequency and violation rates.
Keywords: Pesticides; Residues; Risk assessment; Food safety; Fruits; Vegetables

Alisa Perry, Helen Rasmussen, Elizabeth J. Johnson, Xanthophyll (lutein, zeaxanthin) content in fruits, vegetables and corn and egg products, Journal of Food Composition and Analysis, Volume 22, Issue 1, February 2009, Pages 9-15, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.07.006.
(http://www.sciencedirect.com/science/article/B6WJH-4T6CTKV-2/2/fad5f25e967c594fdee2c0c4f13cb2f9)
Abstract:
Lutein and zeaxanthin are carotenoids that are selectively taken up into the macula of the eye where they are thought to protect against the development of age-related macular degeneration. Current dietary databases make it difficult to ascertain their individual roles in eye health because their concentrations in foods are generally reported together. The objective of this work is to determine the concentrations of lutein and zeaxanthin, separately, within major food sources of dietary xanthophylls as determined by NHANES 2001-2002 intakes. Corn and corn products were found to be major contributors of dietary zeaxanthin whereas green leafy vegetables were major

contributors of dietary lutein. The predominant isomeric xanthophyll form was trans for all foods. Processed foods contained more cis xanthophyll isomers than fruits and vegetables. These data will provide added information to the current databases for lutein and zeaxanthin content of commonly consumed foods as well as enhance the validity of estimates of dietary intake of these xanthophylls and their respective contributions to health.
Keywords: Lutein; Zeaxanthin; Carotenoids; Corn products; Egg products; Food composition

M. Cecilia N. Nunes, Jean Pierre Emond, Mary Rauth, Sharon Dea, Khe V. Chau, Environmental conditions encountered during typical consumer retail display affect fruit and vegetable quality and waste, Postharvest Biology and Technology, Volume 51, Issue 2, February 2009, Pages 232-241, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.07.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4TXDXGJ-2/2/925e1ea544040bbc2a2a1f95c13457f8)
Abstract:
Temperature and relative humidity (RH) are the most important environmental factors affecting the sensory quality of fresh produce, and therefore, the consumer acceptability for fruits and vegetables displayed in a produce department. Poor temperature management inevitably occurs in commercial handling and reduces the quality and maximum potential shelf life of fruits and vegetables. Since there is a lack of information on the actual temperatures registered inside local distribution trucks or in consumer retail displays, and the effects on the produce quality, the current study was designed to evaluate the segment of the distribution chain that comprises the time the produce arrives from the distribution center to the store, is displayed at the store, and then stored under household conditions. Temperature and RH were recorded in three different produce departments, at reception and during a 6-week retail display period. Truck and produce temperatures were collected immediately upon opening of the doors, and display temperatures were monitored inside 27 refrigerated and non-refrigerated retail displays. Visual quality of 37 different produce items was evaluated, and surface or pulp temperatures were measured immediately upon unloading from the delivery truck. Reasons for produce waste were recorded on a daily basis during a 6-week period. Shelf life studies were conducted under simulated household conditions using samples collected at the stores. Results from this study showed that chilling-sensitive commodities were transported under too cold conditions, whereas heat-sensitive commodities were transported under too warm conditions. Visual quality of the produce received at the store ranged from good to poor depending on the fruit or vegetable evaluated, with raspberry receiving the lowest visual quality score in 6.7% of store deliveries, and banana, fresh-cut vegetables, peach and pineapple receiving the best visual quality score in 100% of store deliveries. Temperatures measured inside retail displays showed a wide variation, depending on the store and location inside the display, ranging from -1.2 [degree sign]C to 19.2 [degree sign]C in refrigerated displays and from 7.6 [degree sign]C to 27.7 [degree sign]C in non-refrigerated displays. RH ranged from 55.9% to 92.9% in refrigerated displays and from 29.7% to 86.6% in non-refrigerated displays. Poor temperature management was the major cause of produce waste (55%) whereas expired date and mechanical damage accounted for 45% of the produce wasted. Results from this study show that fruits and vegetables are often handled under adverse environmental conditions, resulting in produce with poor quality and shorter shelf life, and increased waste at the retail and consumer levels.
Keywords: Transport; Retail store; Household; Temperature; Humidity; Shelf life

Lucia Fama, Lia Gerschenson, Silvia Goyanes, Starch-vegetable fibre composites to protect food products, Carbohydrate Polymers, Volume 75, Issue 2, 22 January 2009, Pages 230-235, ISSN 0144-8617, DOI: 10.1016/j.carbpol.2008.06.018.
(http://www.sciencedirect.com/science/article/B6TFD-4T0WJW3-1/2/a9387aa21cb1a0f8fc1c6374bdefed87)

Abstract:
The influence of wheat bran content in biodegradable composites based on cassava starch and containing glycerol and potassium sorbate were studied. Films were produced by casting and three different fractions of wheat bran fibre were used: 1.5 mg, 13.5 mg and 27.1 mg/g of matrix.
It was observed that the addition of wheat bran, which contains 40 g of water insoluble fibre per 100 g of bran, shifted the glycerol-rich phase glass transition temperature toward higher temperatures, broadening and diminishing in intensity the peak associated with this relaxation. This effect suggests that the presence of fibre led to an enhancement in the glycerol dispersion.
At room temperature, an increase in fibre content did not affect density of the matrix but caused the increase of the storage modulus and the decrease of loss tangent, moisture content and water vapor permeability. Besides, the addition of fibres led to the increase of the yellow index.
The improvement in water vapor barrier properties jointly with the enhancement of mechanical properties when fibre was present, lead to the idea that the composite developed can be used to protect food and extend its shelf life.
Keywords: Composites; Starch-wheat bran; Physicochemical characterization

Jean A.T. Pennington, Rachel A. Fisher, Classification of fruits and vegetables, Journal of Food Composition and Analysis, In Press, Corrected Proof, Available online 22 January 2009, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.11.012.
(http://www.sciencedirect.com/science/article/B6WJH-4VF56TB-4/2/a47533658a37afae0522fd6681d6e36b)
Abstract:
Classifications for fruits and vegetables are most helpful for dietary assessment and guidance if they are based on the composition of these foods. This work determined whether levels of food components in fruits and vegetables correlated with classification criteria based on botanic family, color, part of plant, and total antioxidant capacity (TAC). A database of 104 commonly consumed fruits and vegetables was created that contained food components known to be provided primarily by these foods. A mathematical clustering algorithm was used to group the foods into homogeneous clusters based on food component levels and the classification criteria. Most useful in categorizing were the botanic families rose, rue (citrus), amaryllis, goosefoot, and legume; color groupings blue/black, dark green/green, orange/peach, and red/purple; and plant parts fruit-berry, seeds or pods, and leaves. Groupings based on TAC levels did not match well with the identified clusters. Clusters were often best defined by a combination of classification variables such as color and part of plant. Results suggest that the groupings dark green leafy vegetables; cabbage family vegetables; lettuces; allium family bulbs; legumes; deep orange/yellow fruits, roots, and tubers; citrus family fruits; tomatoes and other red vegetables and fruits; and red/purple/blue berries are predictive for food components provided by fruits and vegetables.
Keywords: Antioxidants; Classification; Dietary assessment; Dietary guidance; Food composition; Fruits; Phytonutrients; TAC; Total antioxidant capacity; Vegetables

Dominique Boivin, Sylvie Lamy, Simon Lord-Dufour, Jessica Jackson, Edith Beaulieu, Martine Cote, Albert Moghrabi, Stephane Barrette, Denis Gingras, Richard Beliveau, Antiproliferative and antioxidant activities of common vegetables: A comparative study, Food Chemistry, Volume 112, Issue 2, 15 January 2009, Pages 374-380, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.05.084.
(http://www.sciencedirect.com/science/article/B6T6R-4SNNTB3-3/2/e2c9ee1b9dcfc7f24859584b4d2c1998)
Abstract:
Epidemiological studies have consistently linked abundant consumption of fruits and vegetables to a reduction of the risk of developing several types of cancer. In most cases, however, the identification of specific fruits and vegetables that are responsible for these effects is still lacking,

retarding the implementation of effective dietary-based chemopreventive approaches. As a first step towards the identification of foods endowed with the most potent chemopreventive activities, we evaluated the inhibitory effects of extracts isolated from 34 vegetables on the proliferation of 8 different tumour cell lines. The extracts from cruciferous vegetables as well as those from vegetables of the genus Allium inhibited the proliferation of all tested cancer cell lines whereas extracts from vegetables most commonly consumed in Western countries were much less effective. The antiproliferative effect of vegetables was specific to cells of cancerous origin and was found to be largely independent of their antioxidant properties. These results thus indicate that vegetables have very different inhibitory activities towards cancer cells and that the inclusion of cruciferous and Allium vegetables in the diet is essential for effective dietary-based chemopreventive strategies.
Keywords: Cancer prevention; Cruciferous vegetables; Allium vegetables; Antioxidants

C.A. Sanchez, D. Zerihun, K.L. Farrell-Poe, Management guidelines for efficient irrigation of vegetables using closed-end level furrows, Agricultural Water Management, Volume 96, Issue 1, January 2009, Pages 43-52, ISSN 0378-3774, DOI: 10.1016/j.agwat.2008.06.010.
(http://www.sciencedirect.com/science/article/B6T3X-4T9TC42-1/2/3a63dff0f1b6fa73e8c1b2bc91a5843c)
Abstract:
Closed-end level furrows are commonly used to irrigate vegetables in the Lower Colorado River region (LCRR). The application efficiency of furrow irrigation in this area is often low. The objective of this study is to develop management tools and guidelines for the efficient irrigation of vegetables using closed-end level furrows. The study consisted of field experiment and modeling (model calibration, model verification, and the development of management tools by simulation). Field experiments were performed over a period of 27 months. Infiltration parameters were estimated for four soil textural groups (i.e., moderately coarse textured, medium textured, moderately fine textured, and fine textured soils) using a two-point method modified for closed-end level furrows. Model verification shows that the surface irrigation hydraulic model used in this study (SRFR) is capable of simulating the furrow irrigation process with acceptable levels of accuracy. Results of the study also indicate that adequate and efficient irrigations can be achieved using closed-end level furrows through the proper selection of unit inlet flow rate, Qo, and cutoff time, tco. However, given the soil and crop combinations in the LCRR, sometimes significant increases in irrigation efficiency, compared to present levels, can be attained only if furrow lengths are shorter than the typical size currently in use in the LCRR. Limitations of the proposed management tools and on-going research to address these limitations are briefly discussed.
Keywords: Furrow irrigation; Irrigation modeling; Irrigation efficiency

M. Kumar, N. Kumar, K.P. Singh, P. Kumar, K. Srinivas, A.K. Srivastva, Integrating water harvesting and gravity-fed micro-irrigation system for efficient water management in terraced land for growing vegetables, Biosystems Engineering, Volume 102, Issue 1, January 2009, Pages 106-113, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2008.09.026.
(http://www.sciencedirect.com/science/article/B6WXV-4V1FBVW-2/2/296d1d705f641241cf82b1a0f4537c4a)
Abstract:
Enhancing and sustaining the productivity of hill agriculture in North-West Himalayan Region (NWHR) is a major challenge as it is practised under ecologically fragile environments which include altitudinal, climatic and topographical variations. The present study envisaged the scope for water resources development and its utilization in crop production through gravity-fed micro-irrigation enhancing water use in the terrace land of NW Himalaya. The water was harvested from a distantly located ultra low discharge water source to the lined tank and the micro-irrigation system (MIS) was integrated such that it could be operated by gravity. The system performance

was found satisfactory as the flow rate variation, Christiansen uniformity coefficient and distribution uniformity were 26.5%, 86.3% and 87.5%, respectively. The system saved 41.1% and 33.3% irrigation water as compared to check basin irrigation in case of vegetable pea and French bean, respectively. The water use efficiency of the system was significantly higher than check basin irrigation. Economic indicators such as Net Present Value, Benefit Cost Ratio, Internal Rate of Return and payback period were used to evaluate the gravity-fed MIS and were INR 160,523 (1$ = 40.50 INR), 1.78, 12.2% and 3.38 years, respectively. It is recommended that the gravity-fed MIS must be integrated with the water harvesting system to effectively and economically utilize the water in vegetable cultivation in terraced land of the hill farming system.

A.L.K. Faller, E. Fialho, The antioxidant capacity and polyphenol content of organic and conventional retail vegetables after domestic cooking, Food Research International, Volume 42, Issue 1, January 2009, Pages 210-215, ISSN 0963-9969, DOI: 10.1016/j.foodres.2008.10.009.
(http://www.sciencedirect.com/science/article/B6T6V-4TVJ3JG-2/2/0b62000656f45b63c380f2d189ce76e9)
Abstract:
Vegetable consumption is associated with health benefits. Organic foods are thought to have higher contents of antioxidant substances. The objective of this work is to quantify soluble and hydrolyzable polyphenols, ascorbic acid, and the antioxidant capacity of fresh conventional and organic retail vegetables (potato, carrot, onion, broccoli, and white cabbage) while evaluating the effect of boiling, microwaving, and steaming on these parameters. The recovery rate for soluble and hydrolyzable polyphenols was variable according to the vegetable analyzed. However, soluble polyphenols resulted in lower recovery rates than did hydrolyzable phenolics after cooking. Organic vegetables showed higher sensitivity to heat processing than did conventionally grown vegetables. In general, cooking was found to lead to reductions in the antioxidant capacity for most vegetables, with small differences between the cooking methods applied. Even with the alterations in their content, polyphenols showed a positive correlation with antioxidant capacity in raw and cooked vegetables from both types of agriculture.
Keywords: Polyphenol; Antioxidant capacity; Organic; Vegetables; Cooking

Francisco J. Cuesta, Manuel Lamua, Fourier series solution to the heat conduction equation with an internal heat source linearly dependent on temperature: Application to chilling of fruit and vegetables, Journal of Food Engineering, Volume 90, Issue 2, January 2009, Pages 291-299, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2008.06.036.
(http://www.sciencedirect.com/science/article/B6T8J-4SX9FT8-1/2/f247bcdf4b770670c8bbaee75b5c0bc3)
Abstract:
This paper proposes a separation of variables solution to the equation for heat transfer by conduction in simply-shaped, homogeneous and isotropic bodies subjected to cooling or heating processes without a phase change and with an internal heat source that is a linear function of temperature and subject to homogeneous external conditions of the third kind. The solution is given by the sum of an infinite Fourier series. Starting from this solution, the paper also proposes a simple calculation of chilling time based on an approximation to the first term of that solution (exponential zone); it further proposes a first approximation to the maximum value attained by the temperature history, and to the corresponding time.
Keywords: Transient heat transfer; Cooling; Heat of respiration; Chilling times

Kathleen Fleege Harrington, Connie L. Kohler, Leslie A. McClure, Frank A. Franklin, Fourth Graders' Reports of Fruit and Vegetable Intake at School Lunch: Does Treatment Assignment Affect Accuracy?, Journal of the American Dietetic Association, Volume 109, Issue 1, January 2009, Pages 36-44, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.10.006.

(http://www.sciencedirect.com/science/article/B758G-4V6SCMB-B/2/d1c6093695f73445bfd030b9afb194ea)
Abstract: Objective
Dietary interventions with children often use self-reported data to assess efficacy despite that objective methods rarely support self-report findings in validation studies. This study compared fourth graders' self-reported to observed lunch fruit and vegetable intake to determine if the accuracy of self-reported intake varied by treatment condition.Design
Matched randomized follow-up design examined three treatment groups (high and low intensity interventions and control) post-intervention.Subjects/setting
Three hundred seventy-nine middle-school children participating in a randomized controlled trial of a school-based fruit and vegetable intervention were observed during school lunch one day and asked to recall intake the following day.Main outcome measures
Food items were coded as: 'match,' 'omission,' or 'intrusion.' Students were classified as accurate if all food items matched, otherwise inaccurate. Matched foods' portions were compared for accuracy. Servings were computed for total fruit and vegetable intake.Analyses
Accuracy for fruits and vegetables were compared in separate analyses and tested for multiple potential associates: treatment condition, sex, race, body mass index, subsidized meal eligibility, school district, fruit/vegetable availability, age, and test scores. Fitted multivariable regression models included variables found to be significant in univariate or [chi]2 analyses.Results
Variables found to be significant for fruit item accuracy were availability at lunch, body mass index, and subsidized lunch eligibility. For vegetable item accuracy, availability at lunch was significant. No differences were found for food portions or for efficacy of the intervention between the two methods of dietary data collection: observation and self-report.Conclusions
Condition assignment did not bias recalled fruit and vegetable intakes among fourth graders.

Emily Locke, Gloria D. Coronado, Beti Thompson, Alan Kuniyuki, Seasonal Variation in Fruit and Vegetable Consumption in a Rural Agricultural Community, Journal of the American Dietetic Association, Volume 109, Issue 1, January 2009, Pages 45-51, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.10.007.
(http://www.sciencedirect.com/science/article/B758G-4V6SCMB-C/2/f6d92e67f31001e12403b0519befe125)
Abstract: Background
Seasonal variation in fruit and vegetable consumption has been documented in a limited number of previous investigations and is important for the design of epidemiologic investigations and in the evaluation of intervention programs.Objective
This study investigates fruit and vegetable consumption behaviors among Hispanic farmworkers and non-farmworkers in a rural agricultural community.Design
A larger study recruited 101 farmworker families and 100 non-farmworker families from the Yakima Valley in Washington State between December 2004 and October 2005. All families were Hispanic. An in-person administered questionnaire collected information on consumption of locally grown fruits and vegetables and sources of obtaining fruits and vegetables. Data on dietary intake asked whether or not the respondent had consumed a given fruit or vegetable in the past month. Data were collected longitudinally, coinciding with three agricultural seasons: thinning (summer), harvest (fall), and nonspray (winter).Statistical analyses performed
Generalized estimating equations were used to test for statistical significance between proportions of the population who consumed a given fruit or vegetable across agricultural seasons. Multivariable logistic regression was performed and corresponding odds ratios and 95% confidence intervals are reported.Results
The proportion of respondents who ate apples, pears, plums, peaches, apricots, peppers, corn, and cucumbers was highest in the fall harvest season, whereas the proportions of those who ate cherries and asparagus were highest in the summer thinning season. Compared to non-

farmworkers, a higher proportion of farmworkers reported having eaten peaches, apricots, cherries, green beans, carrots, peppers, corn, pumpkin, squash, and onions, in the past month.Conclusions
Epidemiologic investigations and public health interventions that examine the consumption of fruits and vegetables should consider seasonal variation in consumption patterns, especially in agricultural communities.

G.D. Vermeulen, J. Mosquera, Soil, crop and emission responses to seasonal-controlled traffic in organic vegetable farming on loam soil, Soil and Tillage Research, Volume 102, Issue 1, January 2009, Pages 126-134, ISSN 0167-1987, DOI: 10.1016/j.still.2008.08.008.
(http://www.sciencedirect.com/science/article/B6TC6-4TK7X4J-2/2/cf19e9d5035dad6ac8a4652b99db8aa8)
Abstract:
Some organic arable and vegetable farms in the Netherlands use cm-precise guidance of machinery to restrict wheel traffic to fixed traffic lanes and to achieve non-trafficked cropping zones with optimized soil structure in between the lanes. Contrary to controlled traffic farming (CTF) the traffic lanes are not yet used for harvesting and primary tillage. Therefore, the system is called a seasonal-controlled traffic farming (SCTF) system. A field experiment was conducted on an organic vegetable farm to reveal soil, crop and emission responses of SCTF with traffic lanes at 3.15-m centres compared with conventional random traffic farming (RTF) using low ground pressures in spring from 2002 till 2005. The traffic systems were investigated in the crops green pea (Pisum sativum L.), spinach (Spinacea oleracea L.), onions (Allium cepa L.) and carrots (Daucus carota L.). Compared with RTF, the topsoil structure in the SCTF system improved for the crops sown on the flat but not for carrot grown on ridges. Crop yields increased significantly in green pea, spinach and planted onion sets but not in carrot and direct-sown onion. The available N-min at the end of the cropping period was not different between systems and, therefore, leaching losses in winter are expected to be the same. SCTF resulted in a significant reduction of N_2O emissions (by 20-50% compared to RTF). For CH_4, application of the SCTF system resulted in increased CH_4 uptake (by a factor 5-20) compared to the RTF system in three of the four measured fields. At the fourth field, lower (but not significant) CH_4 emissions (by a factor 4) were measured in the SCTF system compared to RTF. Effects of SCTF on timeliness and on the economic feasibility are discussed.
Keywords: Controlled traffic; Organic vegetable farming; Nitrous oxide; Methane

Monu Arora, Bala Kiran, Shweta Rani, Anchal Rani, Barinder Kaur, Neeraj Mittal, Heavy metal accumulation in vegetables irrigated with water from different sources, Food Chemistry, Volume 111, Issue 4, 15 December 2008, Pages 811-815, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.04.049.
(http://www.sciencedirect.com/science/article/B6T6R-4SCDB5V-2/2/87fe3d1fd38d7747c8bc40a390082ac1)
Abstract:
The present study was carried out to assess levels of different heavy metals like iron, manganese, copper and zinc, in vegetables irrigated with water from different sources. The results indicated a substantial build-up of heavy metals in vegetables irrigated with wastewater. The range of various metals in wastewater-irrigated plants was 116-378, 12-69, 5.2-16.8 and 22-46 mg/kg for iron (Fe), manganese (Mn), copper (Cu) and zinc (Zn), respectively. The highest mean levels of Fe and Mn were detected in mint and spinach, whereas the levels of Cu and Zn were highest in carrot. The present study highlights that both adults and children consuming vegetables grown in wastewater-irrigated soils ingest significant amount of these metals. However, the values of these metals were below the recommended maximum tolerable levels proposed by the [Joint FAO/WHO Expert Committee on Food Additives (1999). Summary and conclusions. In 53rd Meeting, Rome, June 1-

10, 1999]. However, the regular monitoring of levels of these metals from effluents and sewage, in vegetables and in other food materials is essential to prevent excessive build-up of these metals in the food chain.
Keywords: Daily intake; Heavy metal; Plant uptake; Wastewater irrigation

Veronique J. Barthet, Virginia Gordon, James K. Daun, Evaluation of a colorimetric method for measuring the content of FFA in marine and vegetable oils, Food Chemistry, Volume 111, Issue 4, 15 December 2008, Pages 1064-1068, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.05.026.
(http://www.sciencedirect.com/science/article/B6T6R-4SH0Y55-5/2/34eca3bb4a717b324164883772aa66e9)
Abstract:
Free fatty acids (FFA) are produced from triacylglycerides (TAG) through chemical or enzymatic hydrolysis. They are usually associated with undesirable flavour and textural changes when they are present in fats and oils. In the oil processing industry, FFA's are determined to give an indication of the amount of alkali required to remove them as soaps during the refining stage. This is a titration method requiring considerable time and large amounts of sample for oils containing low levels of FFA. Oils containing low levels of FFA, especially marine oils, showed poor repeatability. When the amount of oil required for the analysis (56 g) was used, an emulsion was formed making difficult to obtain a stable change in colour. FASafe is a rapid colorimetric method requiring less than 1 g of oil. Good agreement between the two methods was obtained at lower levels of FFA (<1.0%). For fish oil samples higher results were obtained by FASafe than the AOCS titration method and results for samples with high levels of FFA tended to be lower by FASafe than by the AOCS method.
Keywords: FFA; Colorimetric method; Oil

B.E. Torstensen, M. Espe, M. Sanden, I. Stubhaug, R. Waagbo, G.-I. Hemre, R. Fontanillas, U. Nordgarden, E.M. Hevroy, P. Olsvik, M.H.G. Berntssen, Novel production of Atlantic salmon (Salmo salar) protein based on combined replacement of fish meal and fish oil with plant meal and vegetable oil blends, Aquaculture, Volume 285, Issues 1-4, 7 December 2008, Pages 193-200, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2008.08.025.
(http://www.sciencedirect.com/science/article/B6T4D-4TCHKGJ-3/2/db95a49d67fab96c3fd69e7c123548c3)
Abstract:
The aim of the present study was to combine maximum replacement of fish meal and fish oil with plant ingredients in feed for Atlantic salmon, in order to gain a sound and sustainable net fish protein production. The design implied that all known nutrient requirements should be met. Atlantic salmon smolts with an initial weight of 0.3 kg were fed in triplicate either a fully marine control diet or one of three plant based diets through the seawater production phase for 12 months, until final weight of approximately 4 kg. In a maximum plant based diet, 80% of the fish meal was replaced with a mixture of plant protein ingredients and krill meal, while 70% the fish oil was replaced with a mixture of vegetable oils. Two intermediate replacement diets contained either one half of this fish meal replacement level and maximum fish oil replacement, or one half replacement level of fish oil and maximum fish meal replacement. Fish performance was assessed by measuring mortality, feed intake, growth, nutrient digestibility and nutrient utilisation. Specific growth rate was significantly lower in the combined high replacement group compared to the other experimental groups, both for the first 3-month period (12%) and for the complete 12 months (9%) of feeding. The final fish weights were 17% lower in the combined high replacement group and 9% lower in the high plant protein and intermediate vegetable oil group, compared to the marine control and the intermediate plant protein group. Significantly reduced feed intake during the first period and slightly reduced digestibility of 16:0 and starch were identified as possible causes for growth

depression, since minor differences in protein or lipid digestibility, feed conversion ratio, and protein and lipid retention were observed.
The maximum fish meal and fish oil replacement represented a net production of fish protein, with 2 kg salmon protein produced per kg fish meal protein fed. This being four-fold more efficient usage of fish meal in the 80% plant protein diets compared to the 100% fish raw material diet.
Keywords: Vegetable oil; Plant protein; Fish meal; Fish oil; Growth; Nutrient utilisation; Nutrient digestibility

Rajae Abouelwafa, Ghita Ait Baddi, Salah Souabi, Peter Winterton, Juan Cegarra, Mohamed Hafidi, Aerobic biodegradation of sludge from the effluent of a vegetable oil processing plant mixed with household waste: Physical-chemical, microbiological, and spectroscopic analysis, Bioresource Technology, Volume 99, Issue 18, December 2008, Pages 8571-8577, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.04.007.
(http://www.sciencedirect.com/science/article/B6V24-4SJ9G6C-2/2/d8d6dea10df2b1463ea6bbe95ee9b41f)
Abstract:
Sludge from a sewage treatment plant dealing with the effluent produced during the processing of crude vegetable oil (Lesieur-Cristal, Morocco) was composted in two mixtures (M1 and M2) with household waste obtained from landfill. The different physico-chemical characteristics of the final composts after 5 months of composting were, for M1 and M2, respectively: pH: 8.5 and 7.08; C/N: 10 and 16; proportion of decomposition: 78% and 55%, : 0.78 and 1.02. Monitoring the levels of lipid and total polyphenols showed a reduction of 81% and 72% for lipids and of 75% and 76% for polyphenols in M1 and M2, respectively. These reductions were paralleled by a rise in the humic acid content to reach 22 and 36 mg/g, respectively. Overall, these results were confirmed by the FTIR spectroscopy study of the two mixtures. For M1, the FTIR spectra taken at different stages showed that during composting, biodegradation of the aliphatic compounds occurred as the proportion of aromatic structures increased. The transformations observed qualitatively were then confirmed quantitatively by the changes occurring in the various absorption ratios during composting. Mixture M2, however, presented strong absorbance of aliphatic compounds. These results were statistically confirmed by correlation tests and principal components analysis, which confirmed the maturity of the two composts, M1 having matured more than M2.
Keywords: Industrial sludge; Household waste; Composting; Microbiological biomass; FTIR spectroscopy

Puyun Yang, Wenxin Liu, Xunan Shan, Ping Li, Jinyu Zhou, Jianping Lu, Yahong Li, Effects of training on acquisition of pest management knowledge and skills by small vegetable farmers, Crop Protection, Volume 27, Issue 12, December 2008, Pages 1504-1510, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.07.013.
(http://www.sciencedirect.com/science/article/B6T5T-4TFDXWX-2/2/895d105e150952cf2c130dc1415462cb)
Abstract:
Effects of farmer field school (FFS) and the conventional (classroom lectures) training on acquisition of pest management knowledge and skills by small vegetable farmers were studied in Yunnan province, China from 2003 to 2007. There were significant gains of knowledge about vegetable pests, natural enemies, insect and disease ecology and pest management among the FFS farmers, but were no significant improvements of knowledge among the conventional trained farmers. Vegetable FFS enabled farmers to learn simple knowledge as well as complex IPM knowledge. In contrast, the conventional training only improved vegetable farmers' simple knowledge. The potential and limitations of FFS as a unique extension tool to disseminate the complex knowledge of IPM to smallholder farmers were demonstrated.
Keywords: Integrated pest management; Knowledge; Farmer field school; Training

Godfred Darko, Osei Akoto, Dietary intake of organophosphorus pesticide residues through vegetables from Kumasi, Ghana, Food and Chemical Toxicology, Volume 46, Issue 12, December 2008, Pages 3703-3706, ISSN 0278-6915, DOI: 10.1016/j.fct.2008.09.049.
(http://www.sciencedirect.com/science/article/B6T6P-4TJ1HR5-1/2/ed2bc8bcfae33fa968bf464be38a3855)
Abstract:
Contamination and health risk hazards of organophosphorus pesticides residues in vegetables were studied. Ethyl-chlorpyrifos, observed at an average level of 0.211 +/- 0.010 mg kg-1 in 42% of tomato, 0.096 +/- 0.035 mg kg-1 in 10% of eggplant and 0.021 +/- 0.013 mg kg-1 in 16% of pepper was below the 0.5 mg kg-1 MRL. Dichlorvos was the most frequently detected residue in all the samples analyzed. Levels of malathion in tomatoes (0.120 +/- 0.101 mg kg-1) and pepper (0.143 +/- 0.042 mg kg-1) exceeded the MRL of 0.1 mg kg-1. Health risks were found to be associated with methyl-chlorpyrifos, ethyl-chlorpyrifos, and omethioate in tomatoes and methyl-chlorpyrifos, ethyl-chlorpyrifos, dichlorvos, monocrotophos and omethioate in eggplant. Routine monitoring of these pollutants in food items is required to prevent, control and reduce the pollution and to minimize health risks.
Keywords: ADI; Gas chromatography; Hazard index; MRL; Organophosphorus pesticides; Vegetables

Carla Estaquio, Nathalie Druesne-Pecollo, Paule Latino-Martel, Luc Dauchet, Serge Hercberg, Sandrine Bertrais, Socioeconomic Differences in Fruit and Vegetable Consumption among Middle-Aged French Adults: Adherence to the 5 A Day Recommendation, Journal of the American Dietetic Association, Volume 108, Issue 12, December 2008, Pages 2021-2030, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.09.011.
(http://www.sciencedirect.com/science/article/B758G-4V03C8S-S/2/309d05e544d70c194b53f50cb0d6418c)
Abstract: Background
Numerous studies support the protective effect of high fruit and vegetable consumption on chronic disease risk, mainly against cancer and cardiovascular diseases. The increase of fruit and vegetable intake has become a public health priority in many countries.Objective
The aim of the study was to investigate the relationships of socioeconomic, demographic, and behavioral factors with both quantity and variety of fruit and vegetable consumption.Design/subjects
Fruit and vegetable intake was assessed using repeated 24-hour dietary records collected during a 2-year period from 4,282 French subjects (2,373 men and 1,909 women), aged 45 to 62 years, who participated in a large prospective study.Statistical analysis
Both education level and occupation categories were used as socioeconomic indicators. Logistic regression models were applied to assess factors related to meeting the 5 A Day fruit and vegetable recommendation. Covariance analyses were performed to compare the fruit and vegetable variety scores and the contributions of fruit and vegetables to the total daily diet cost across socioeconomic indicators within each sex.Results
Meeting the 5 A Day recommendation was more likely in subjects aged 50 years and older, higher education levels, nonsmokers, moderate alcohol drinkers and in women engaging in regular physical activity. The odds ratio (95% confidence interval) for the lower vs higher education level was 0.70 (0.54 to 0.92) in men and 0.65 (0.48 to 0.85) in women. No significant difference was observed between occupation categories. A positive relationship between vegetable variety and education level was found in both sexes. Fruit variety was positively associated with both education and occupation categories, but only in men. The contribution of fruits to the total daily diet cost increased with occupation ($P<0.02$) and education ($P<0.0001$) in men, but decreased with occupation in women ($P<0.05$).Conclusions

Although cost constraints may explain the lower fruit and vegetable intake in lower socioeconomic groups, the relative influence of budgetary resources, nutrition knowledge, and social and environmental barriers in socioeconomic disparities need further investigation.

Paulo F. Da Silva, Rosana G. Moreira, Vacuum frying of high-quality fruit and vegetable-based snacks, LWT - Food Science and Technology, Volume 41, Issue 10, December 2008, Pages 1758-1767, ISSN 0023-6438, DOI: 10.1016/j.lwt.2008.01.016.
(http://www.sciencedirect.com/science/article/B6WMV-4RSBYKR-1/2/a087d07a537e6a831133868042e725eb)
Abstract:
Sweet potato, green beans, Tommy Atkins mango, and blue potato were fried in a vacuum frying process at a temperature of 120-130 +/- 1[degree sign]C. Before frying, green beans and mango slices were soaked in a 50% maltodextrine 0.15% citric acid solution. The products were also fried in a traditional (atmospheric pressure) fryer at 160-165 +/- 1[degree sign]C for 4 min. A 30-member consumer panel rated the sensory quality of both types of fried snacks using a 1-9 hedonic scale. Compared with traditional frying, oil content of vacuum-fried sweet-potato chips and green beans was 24% and 16% lower, respectively. Blue potato and mango chips had 6% and 5% more oil, respectively, than the traditional-fried samples. Anthocyanin (mg/100 g d.b.) of vacuum-fried blue potato chips was 60% higher. Final total carotenoids (mg/g d.b.) were higher by 18% for green beans, 19% for mango chips, and by 51% for sweet-potato chips. Sensory panelists overwhelmingly preferred ($p < 0.05$) the vacuum-fried products for color, texture, taste, and overall quality. Most of the products retained or accentuated their original colors when fried under vacuum. The traditional-fried products showed excessive darkening and scorching. These results support the applicability of vacuum frying technology to provide high-quality fruit and vegetable snacks.
Keywords: Vacuum frying; Fruit and vegetables; Oil content; Vitamin; Sensory

Deborah Brzys Busick, Judith Brooks, Sandra Pernecky, Rebecca Dawson, Joy Petzoldt, Parent food purchases as a measure of exposure and preschool-aged children's willingness to identify and taste fruit and vegetables, Appetite, Volume 51, Issue 3, November 2008, Pages 468-473, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.01.013.
(http://www.sciencedirect.com/science/article/B6WB2-4SH0XNY-1/2/12dffb0036fb013c2b233492773e2d81)
Abstract:
This study explored whether parents who purchase more fruit/vegetables have preschool-aged children who are able to identify fruit/vegetables and in turn are more likely to consume them. Sixty-two parent-child pairs were recruited during a 4-month period. The data collection included a child interview, a parent/guardian interview, a fruit/vegetable taste test for children, and a month-long food-receipt collection by the parent/guardian. As the percentage of fruit/vegetables purchased by parent increased, the child was more likely to accept all of the fruit/vegetables offered to him/her. A weak correlation was found between the child's ability to name fruit/vegetables and their willingness to try the fruit/vegetables offered. A trend was established between the child's ability to name the 10 fruits/vegetables and parent fruit/vegetable purchases. Parents who purchased the most fruit/vegetables, causing increased exposure, had children who were more willing to taste the fruit/vegetables offered to them.
Keywords: Fruit and vegetable; Exposure; Food purchases; Food preferences; Children; Parents

G.G. Zeinstra, C. de Graaf, M.A. Koelen, The influence of preparation method on children's liking for vegetables, Appetite, Volume 51, Issue 3, November 2008, Page 757, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.05.028.

(http://www.sciencedirect.com/science/article/B6WB2-4SV12JV-Y/2/969123f9a40a8ac5d5744a08c747ec2a)

G. Herbert, O. Kennedy, A. Lobb, L.T. Butler, Gender differences in young adults' beliefs and behaviour towards fruit and vegetable consumption, Appetite, Volume 51, Issue 3, November 2008, Page 758, ISSN 0195-6663, DOI: 10.1016/j.appet.2008.05.029.
(http://www.sciencedirect.com/science/article/B6WB2-4SV12JV-10/2/da24e0e1e0bebb26c2ea050ad2ed765f)

Om Prakash, Mahe Talat, S.H. Hasan, Rajesh K. Pandey, Factorial design for the optimization of enzymatic detection of cadmium in aqueous solution using immobilized urease from vegetable waste, Bioresource Technology, Volume 99, Issue 16, November 2008, Pages 7565-7572, ISSN 0960-8524, DOI: 10.1016/j.biortech.2008.02.008.
(http://www.sciencedirect.com/science/article/B6V24-4S9R1W1-1/2/ed16a1b2bdb13fae564367ae61387ff9)
Abstract:
Free as well as alginate immobilized urease was utilized for detection and quantitation of cadmium (Cd2+) in aqueous samples. Urease from the seeds of pumpkin (Cucumis melo), being a vegetable waste, was extracted and purified to apparent homogeneity (Sp. Activity 353 U/mg protein; A280/A260 = 1.12) by heat treatment at 48 +/- 0.1 [degree sign]C and gel filtration through Sephadex G-200. The homogeneous enzyme preparation was immobilized in 3.5% alginate leading to 86% immobilization and no leaching of the enzyme was found over a period of 15 days at 4 [degree sign]C. Urease catalyzed urea hydrolysis by both soluble and immobilized enzyme revealed a clear dependence on the concentration of Cd2+. The inhibition caused by Cd2+ was non-competitive (Ki = 1.41 x 10-5 M). The time dependent inhibition both in the presence and in absence of Cd2+ ion revealed a biphasic inhibition in the activity. A Response Surface Methodology (RSM) for the parametric optimization of this process was performed using two-level-two-full factorial (22), central composite design (CCD). The regression coefficient, regression equation and analysis of variance (ANOVA) was obtained using MINITAB(R) 15 software. The predicted values thus obtained were closed to the experimental value indicating suitability of the model. In addition to this 3D response surface plot and isoresponse contour plot were helpful to predict the results by performing only limited set of experiments.
Keywords: Urease; Cd2+; Immobilization; Response surface methodology (RSM); Full factorial design

Anantha P. Lakkakula, Michael Zanovec, Linda Silverman, Ellen Murphy, Georgianna Tuuri, Black Children with High Preferences for Fruits and Vegetables Are at Less Risk of Being at Risk of Overweight or Overweight, Journal of the American Dietetic Association, Volume 108, Issue 11, November 2008, Pages 1912-1915, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.08.019.
(http://www.sciencedirect.com/science/article/B758G-4TT89NH-S/2/bfc9db19ba8d1f1328a62424738dc736)
Abstract:
Food preferences play a central role in food choices and consumption. The primary objective of this study was to examine the relationship between children's preferences for fruits and vegetables and their weight status. A total of 341 black children (43% boys; 68% fourth graders) attending low-income, public elementary schools in southeastern Louisiana volunteered to participate. Children were measured for height and weight and completed a survey that sought their preferences for 38 different fruits and vegetables during the fall of 2005. Results indicated that children preferred fruits more than vegetables and that there was a negative association between children's mean fruit and vegetable preference score and their body mass index for age percentile (r=-0.26; P=0.01). Children who reported a very low preference for fruits and vegetables were 5.5

times more likely to be categorized as at risk for overweight or overweight than were those who reported a high preference for fruits and vegetables (odds ratio: 5.5; confidence interval: 1.97 to 15.44; P<0.01). It is believed that food preferences are established early in life; therefore, nutritionists and other health care professionals should promote children's acceptance and intake of fruits and vegetables as a measure to reduce the prevalence of overweight among children.

O.O. Fasina, M. Craig-Schmidt, Z. Colley, H. Hallman, Predicting melting characteristics of vegetable oils from fatty acid composition, LWT - Food Science and Technology, Volume 41, Issue 8, November 2008, Pages 1501-1505, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.09.012.
(http://www.sciencedirect.com/science/article/B6WMV-4PW05PT-1/2/6e3c2603713f8566b948c18bc79e0913)
Abstract:
The enthalpy and melting characteristics (onset melting temperature, endset melting temperature, peak melting temperature and enthalpy of melting) of 12 vegetable oils were experimentally determined within a temperature range of -60 and 25 [degree sign]C by means of a differential scanning calorimeter. Data obtained showed that vegetable oils melt over a wide temperature range (19-44 [degree sign]C). The enthalpy required to increase the temperature of the vegetable oil samples from -60 to 25 [degree sign]C was between 241.1 and 325.7 kJ/kg. Results from fatty acid composition indicate that the amount of the monounsaturated or polyunsaturated is highly correlated (R2>0.91) with the onset melting temperature, peak melting temperature and enthalpy of melting for the 12 vegetable oil samples. Poor correlation (R2<0.27) was obtained between the melting characteristics and the amount of saturated or unsaturated fatty acid. A linear equation was therefore used to relate each of the melting characteristics of a vegetable oil sample to the amount of monounsaturated or polyunsaturated fatty acid. The models developed are valuable for predicting material behavior and for modeling processing operations for vegetable oils.
Keywords: Vegetable oil; Melting temperature; Monounsaturated; Polyunsaturated; Fatty acid

Bernard Bottex, Jean Lou C.M. Dorne, David Carlander, Diane Benford, Hildegard Przyrembel, Claudia Heppner, Juliane Kleiner, Andrew Cockburn, Risk-benefit health assessment of food - Food fortification and nitrate in vegetables, Trends in Food Science & Technology, Volume 19, Supplement 1, EFSA Forum: From Safe Food to Healthy Diets, November 2008, Pages S113-S119, ISSN 0924-2244, DOI: 10.1016/j.tifs.2008.07.005.
(http://www.sciencedirect.com/science/article/B6VHY-4T2DKTT-1/2/e5376f696ab5b04fa6ffe629c41c3edf)
Abstract:
Food authorities should base their decisions on both risk assessment and benefit assessment in relation to foods, food constituents or nutrients when risk-benefit assessment can be carried out. Benefit assessment should mirror the well-established steps of risk assessment. However, methods for their comparison, weighing risks against benefits, have as yet to be developed. The general framework currently available in risk-benefit health assessment of food is described and illustrated with two examples: food fortification with vitamins and minerals, and the consumption of vegetables in relation to their nitrate content.

Sissi Wachtel-Galor, Ka Wing Wong, Iris F.F. Benzie, The effect of cooking on Brassica vegetables, Food Chemistry, Volume 110, Issue 3, 1 October 2008, Pages 706-710, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.02.056.
(http://www.sciencedirect.com/science/article/B6T6R-4RXJYWG-2/2/068b1286dcfa73fda25bdfb665434d59)
Abstract:
Assessing antioxidant intake requires a food antioxidant database. However, cooking may affect antioxidant content due to antioxidant release, destruction or creation of redox-active metabolites.

Here, effects of boiling, steaming and microwaving of broccoli, cauliflower, cabbage and choy-sum (Chinese cabbage) were explored by measuring antioxidant contents of raw and cooked vegetables. Cooking water was also tested. For all cooked vegetables, antioxidant content was highest in steamed > boiled > microwaved, and decreased with longer cooking time, regardless of method. All steamed vegetables had higher antioxidant contents than had matching raw vegetables. Effects were variable for boiling and microwaving. Microwaving caused greater antioxidant loss into cooking water than did boiling. Marked losses of anitoxidants occurred in microwaved cabbage and spinach. To assess food antioxidant content/intake accurately, cooking effects need detailed study. Steaming may be the cooking method of choice to release/conserve antioxidants. The cooking water is a potentially rich source of dietary antioxidants.
Keywords: Vegetables; Antioxidants; FRAP; Cooking

Abay Asfaw, Fruits and vegetables availability for human consumption in Latin American and Caribbean countries: Patterns and determinants, Food Policy, Volume 33, Issue 5, October 2008, Pages 444-454, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2008.01.007.
(http://www.sciencedirect.com/science/article/B6VCB-4S2VG3H-1/2/c984856cd4a45c815e24b2828e9331d0)
Abstract:
Inadequate intake of fruits and vegetables (F&V) is one of the leading causes of chronic diseases in the world. This study examined the patterns and determinants of F&V availability for human consumption in Latin American and Caribbean countries between 1991 and 2002. The results showed that there were considerable disparities between and within countries and only one-third of the sampled countries (if only 20% wastage is assumed) could achieve the World Health Organization's recommendation of 146 kg of F&V intake/capita/year. The elasticities estimated from a fixed effect regression also showed that income, urbanization, price, and poverty were some of the important factors that affect the long-term availability of F&V.
Keywords: Fruit and vegetable availability; Fruit and vegetable intake; Latin America; Chronic disease; Panel data; Stationarity

Edgar Uquiche, Marcia Jerez, Jaime Ortiz, Effect of pretreatment with microwaves on mechanical extraction yield and quality of vegetable oil from Chilean hazelnuts (Gevuina avellana Mol), Innovative Food Science & Emerging Technologies, Volume 9, Issue 4, October 2008, Pages 495-500, ISSN 1466-8564, DOI: 10.1016/j.ifset.2008.05.004.
(http://www.sciencedirect.com/science/article/B6W6D-4SNGM6T-2/2/51e4599c07d73a0a331704a47d89e87e)
Abstract:
The effect of microwave (MW) radiation on hazelnut seed (Gevuina avellana Mol) was studied as a substrate pretreatment prior to oil extraction by pressing. Samples were MW-treated at a frequency of 2450 MHz using a microwave oven. Six MW pretreatments were established, combining two potencies (400 W and 600 W) and three times of pretreatment (120, 180 and 240 s). Extraction oil yield increased with MW pretreatments of hazelnut seed with respect to untreated seeds, as a control. Conditions of 400 W and 240 s were selected (45.3% of extraction oil yield). Observations under light microscopy showed that the microstructure of treated samples to 400 W and 240 s, was modified comparing with that of untreated samples, thereby improving the extraction efficiency. The quality characteristics (e.g. acid value, peroxide value), oil composition (e.g. fatty acids, [alpha]-tocotrienol content) and oil oxidative stability (e.g. induction time) were measured. These results were compared to those of an untreated oil sample. MW pretreatment had a positive effect on oxidative oil stability (induction time of 23.9 h) with respect to untreated oil (8.8 h).Industrial relevance
Chilean hazelnut (Gevuina avellana Mol) is the southernmost Macadamieae species of the family Proteaceae that grows mainly in the southern part of Chile and Argentina. The oil is composed

mainly of unsaturated fatty acids, which represent 93% of the total. Its main components are oleic and palmitoleic acids, which represent 70% fatty acids. Conventional vegetable oil extraction is carried out by pressing or solvent extraction. Solvent oil extraction is the most efficient method; however, its application presents some industrial disadvantages such as plant security problems, emissions of volatile organic compounds into atmosphere, high operation costs and poor quality products caused by high processing temperatures. Mechanical pressing oil extraction is technically less extensive and less labor-intensive than the extraction solvent method . The safety and simplicity of the whole process is advantageous over the more efficient solvent extraction equipment. Furthermore, materials pressed out generally have better preserved native properties, end products are free of chemicals and it is a safer process. However, extraction by just pressing the seeds is relatively inefficient. It is advisable to research new methodologies for pretreating substrates that also allow for better retention and availability of desirable plant metabolites. Within these pretreatments, the radiation microwave is included. There is not much information in the literature about the application of microwave radiation as a pretreatment for Chilean hazelnut and its effect on the microstructure of the substrate, extraction yield and quality of oil. The aim of the present study was to investigate the impact of pretreatment by microwave radiation prior to the oil extraction by pressing on the microstructure, recovery of oils and oil quality of Chilean hazelnut seeds (G. avellana Mol).
Keywords: Chilean hazelnut; Mechanical pressing; Microwave pretreatment; Oil extraction; Oil quality

Farah N. Talpur, M.I. Bhanger, A.U. Rahman, G. Zuhra Memon, Application of factorial design in optimization of anion exchange resin based methylation of vegetable oil and fats, Innovative Food Science & Emerging Technologies, Volume 9, Issue 4, October 2008, Pages 608-613, ISSN 1466-8564, DOI: 10.1016/j.ifset.2008.04.003.
(http://www.sciencedirect.com/science/article/B6W6D-4SH0Y1G-1/2/0de552e6e1c959d6033ba15b2df644d6)
Abstract:
A simple, rapid and fairly selective method for the preparation of fatty acid methyl esters (FAMEs) based on anion exchange resin Amberlite IRA-904 catalyzed transesterification of vegetable oil/fat with iodomethane has been described. The vegetable oil and animal fats used were sunflower oil, palm oil, vanaspati (hydrogenated vegetable oil), olive oil, tallow and butter. A Plackett-Burman factorial experimental design was used as a multivariate strategy for the evaluation of the effects of varying several variables at once. The effects of five different variables amount of resin, strength of sodium hydroxide, volume of iodomethane, heating time and temperature of thermostatic water bath, on the yield of fatty acid methyl esters (FAMEs) have been investigated. From these studies, certain variable showed up as significant, and they were optimized by a using 23 + star central composite design, which involved 16 experiments. The best conditions for transesterification reaction were as follows: amount of resin 2 g, strength of sodium hydroxide 0.25 N, volume of iodomethane 400 [micro sign]l, heating time 2 min at 70 [degree sign]C. A standard IUPAC method was used to prepare FAMEs from vegetable oil/fats for comparative purpose. Finally samples of oil/fat obtained from both methods were analysed by Gas liquid chromatography. Analytical results for the FAMEs by resin based proposed method, and conventional IUPAC method showed a good agreement, thus indicating the possibility of using Amberlite IRA-904 based transesterification instead of intensive treatments inherent with the conventional time-consuming methods.Industrial relevance
Fatty acids are the main components of edible oil and fats, therefore determination of fatty acid composition is so far one of the important parameters for quality evaluation and nutritional value determination of edible oil and fats. The analysis of fatty acid is usually carried out by Gas liquid chromatography (GLC) after conversion of volatile fatty acid methyl esters (FAME) although other ester may be prepared for specific purpose.

The endeavor of present work was to improve the FAMEs preparation method, proposing the development of anion exchange resin Amberlite IRA-904 based transesterification of edible oil/fat with iodomethane as alkylating reagent. The present method besides being rapid and reproducible avoids the use of classical saponification, washing of esters and solvent extraction step.
Keywords: Transesterification; Edible fats; Fatty acid methyl esters; Factorial design optimization; Gas liquid chromatography

H. Lu, J.H. Trienekens, S.W.F. Omta, S. Feng, Influence of guanxi, trust and farmer-specific factors on participation in emerging vegetable markets in China, NJAS - Wageningen Journal of Life Sciences, Volume 56, Issues 1-2, October 2008, Pages 21-38, ISSN 1573-5214, DOI: 10.1016/S1573-5214(08)80015-2.
(http://www.sciencedirect.com/science/article/B94T2-4WJRNXP-4/2/3ba17fdf3021091525aa07b1e7fdf821)
Abstract:
The fast development of market outlets (e.g., supermarkets, processing industries, international markets] in China provides rich opportunities for small-scale farmers to upgrade quality and increase income. However, the high level of transaction costs incurred in small-volume-based vegetable transactions hinders farmers from participating in these emerging markets. This article explores how personal relationships (called guanxi in China] and trust between farmers and their buyers influence transaction costs in vegetable transactions, and thereby also farmers' participation in emerging markets. We interviewed 167 vegetable farmers in Jiangsu Province, which provided data for empirical testing using two-stage probit analysis with endogenous variables. The findings suggest that guanxi and trust effectively reduce transaction costs in vegetable marketing in China, which may help and encourage farmers to better participate in emerging markets. The results also reveal that farmers' age, education, marketing experience, distance to the market, production scale and land quality influence transaction costs. The article ends with policy implications with respect to efficiently reducing transaction costs in vegetable supply chains in order to create a better environment for small-scale farmers in emerging markets in China.
Keywords: buyer-seller relationships; smallholders; supermarkets; transaction costs

G.S. Bezanson, R. MacInnis, G. Potter, T. Hughes, Presence and potential for horizontal transfer of antibiotic resistance in oxidase-positive bacteria populating raw salad vegetables, International Journal of Food Microbiology, Volume 127, Issues 1-2, 30 September 2008, Pages 37-42, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.06.008.
(http://www.sciencedirect.com/science/article/B6T7K-4SRCJHD-6/2/500c6f25e780b30702f5c0794025a3f1)
Abstract:
To assess whether domestically grown fresh salad vegetables constitute a possible reservoir of antibiotic resistance for Canadian consumers, aerobic bacteria capable of forming colonies at 30 [degree sign]C on nutrient-limited media were recovered from a single sampling of Romaine lettuce, Savoy spinach and alfalfa sprouts, then examined for their susceptibility to ten antibiotics and the carriage of potentially mobile R-plasmids and integrons. Of the 140 isolates resistant to one or more antibiotic, 93.5 and 90.0% were resistant to ampicillin and cephalothin; 35.7% to chloramphenicol, 10.0% to streptomycin, 4.2% to nalidixic acid, 4.2% to kanamycin, and 2.8% to gentamicin. Gram-positive isolates accounted for less than 4% of the antibiotic resistant strains. A small portion (23.1%) of the predominant oxidase-positive, gram-negative isolates was resistant to two or more antimicrobials. Members of the Pseudomonas fluorescens/putida complex were most prevalent among the 34 resistant strains identified. Sphingobacterium spp. and Acinetobacter baumanni also were detected. Ten of 52 resistant strains carried plasmids, 3 of which were self-transmissible and bore resistance to ampicillin and kanamycin. Eighteen of 48 gave PCR evidence

for integron DNA. Class 2 type integrons were the most prevalent, followed by class 1. We conclude that the foods examined here carry antibiotic resistant bacteria at the retail level. Further, our determination that resistant strains contain integron-specific DNA sequences and self-transmissible R-plasmids indicates their potential to influence the pool of antibiotic resistance in humans via lateral gene transfer subsequent to ingestion.
Keywords: Antibiotic resistance; R-plasmids; Integrons; Salad vegetables; Oxidase-positive bacteria

Rosalia Trias, Esther Badosa, Emilio Montesinos, Lluis Baneras, Bioprotective Leuconostoc strains against Listeria monocytogenes in fresh fruits and vegetables, International Journal of Food Microbiology, Volume 127, Issues 1-2, 30 September 2008, Pages 91-98, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.06.011.
(http://www.sciencedirect.com/science/article/B6T7K-4SSND0X-1/2/05646b2fbce58d4f38c2049570247afa)
Abstract:
Ten Leuconostoc mesenteroides and one Ln. citreum strains isolated from fresh fruit and vegetables were tested for their antagonistic capacity against Listeria monocytogenes. Genetic differences among strains were analyzed by Random Amplified Polymorphic DNA (RAPD). All the isolates clustered together and differed from the type strain Ln. mesenteroides ATCC 8293 as well as from Ln. fallax and Ln. citreum. Organic acids, hydrogen peroxide and bacteriocins were detected as main inhibition mechanisms. Characterization of culture supernatants from the bacteriocinogenic strains, CM135 and CM160 revealed a high resistance of antibacterial activity to temperature and pH, and a bactericidal mode of action against L. monocytogenes. Produced bacteriocins belonged to the Class IIa and sequencing of genes showed complete homology with mesentericin Y105. A study of the effect of the relative dose of pathogen and LAB on control of L. monocytogenes in wounds of Golden Delicious apples and Iceberg lettuce leaf cuts was performed. A comparison of the dose of bioprotective strain needed for a ten fold reduction of the viable pathogen concentration (ED90) revealed that strain CM160 was the most effective against L. monocytogenes. ED90 values varied from 1.3 [middle dot] 104 to 5.0 [middle dot] 105 cfu[middle dot]g- 1 or wound, at ranges of pathogen levels from 1.0 [middle dot] 103 to 5.0 [middle dot] 104 cfu[middle dot]g- 1 of lettuce or wound of apple. The efficiency of the strains was also calculated as the ratio of the ED90 value to the pathogen dose inoculated. The lowest ratio was found for strain CM160 at 5 to 50 cells of LAB per cell of pathogen. The strain offers potential application for prevention of the presence of L. monocytogenes in fresh fruit and vegetables.
Keywords: Leuconostoc; Fresh fruits; Vegetables; Listeria monocytogenes; Bacteriocin; Bioprotection

Xi-bai ZENG, Lian-fang LI, Xu-rong MEI, Heavy Metal Content in Chinese Vegetable Plantation Land Soils and Related Source Analysis, Agricultural Sciences in China, Volume 7, Issue 9, September 2008, Pages 1115-1126, ISSN 1671-2927, DOI: 10.1016/S1671-2927(08)60154-6.
(http://www.sciencedirect.com/science/article/B82XG-4THKV6G-D/2/502c7724db34fedc4ad8f6b612e60a58)
Abstract:
According to the previous literature published since 1989, statistical analysis for reported data on the heavy metals in Chinese vegetable plantation soils was carried out systematically in this article. The purpose of this investigation was to study the status of heavy metal content in vegetable land soils systematically through objective assessment to promote the development of vegetable production with high quality and efficiency. It is concluded that Zn, Cr, Cu had relatively high concentrations while the mean concentrations of toxic metals, As, Hg, Cd were 8.03, 0.12, 0.28 mg kg-1, respectively with comparatively low concentrations in Chinese vegetable land. Comparing to Chinese Soil Quality Criterion GB 15618-1995 (6.5 < pH < 7.5), about 24.1, 10.3,

and 9.2% of the total samples was contaminated by Cd, Hg, and As, respectively, and the descending order of heavy metals was Cd > Hg > As > Zn > Cu > Cr > Pb. When compared among different regions, the more serious heavy metal contamination was found in the vegetable land of eastern China and the main contamination elements were Cd, Hg, and Zn. In the mid region, vegetable plantation land soil was mainly polluted by As and Cd, as well as by Hg, Zn, and Cu, to some extent. In the west region of China, Cd and As contamination was also observed to some degree, along with few soil samples exceeding the grade II level of GB 15618-1995 (6.5 < pH < 7.5) for Cu, Cr, and Hg content. Compared to the five vegetable plantation land patterns, the highest concentration of As, Cd, Hg, and Zn occurred in the industrial/sewage irrigation vegetable land, especially for Hg with 2.36 mg kg-1 content averagely, which is 10.5-21.1 times higher than the other four types of vegetable lands. The highest concentration of Cu and Cr occurred in the greenhouse vegetable land soils, and urban vegetable land soil had the highest Pb content in comparison with the other types of vegetable plantation land patterns. By analyzing heavy metal content under different vegetable land patterns, it was found that soil in vegetable production base had relatively low heavy metal concentrations except for Pb with a slightly higher amount in the suburb area. The soil quality of common vegetable land was good with the lowest concentrations for most heavy metals. Under present utilization patterns of vegetable land, the soil quality in Chinese vegetable base land was good with comparatively low concentrations of heavy metals and mostly not exceeding the grade II level of Chinese Soil Quality Criterion GB 15618-1995 (6.5 < pH < 7.5). However, comparatively serious contamination was found in industrial/sewage irrigation and suburb vegetable land soils.
Keywords: China; vegetable land; heavy metal; content; reason

J. San Jose Alonso, J.A. Lopez Sastre, C. Romero-Avila, E. Lopez, A note on the combustion of blends of diesel and soya, sunflower and rapeseed vegetable oils in a light boiler, Biomass and Bioenergy, Volume 32, Issue 9, September 2008, Pages 880-886, ISSN 0961-9534, DOI: 10.1016/j.biombioe.2008.01.007.
(http://www.sciencedirect.com/science/article/B6V22-4S0356F-2/2/b49727cb3a4d720a5a8b683facf0d25f)
Abstract:
This paper deals with the study of the vegetable oils (VO) used as fuel for heating. The properties of sunflower, rape and soya oils are studied and these are compared with the properties of C-diesel fuel (used for heating domestic purposes in Spain). The mixtures of VO and diesel are studied and characterized and, finally, the results of a series of combustion trials of the mixtures in a conventional heating installation with a mechanical pulverization burner are presented. The results show that viscosity of VO limits the use of blends up to 40% of them, and the oxygen present in their structures contributes to an efficiency gain.
Keywords: Combustion mixtures; Diesel; Sunflower oil (Helanthus annuus); Rape oil (Brassica napus); Soya oil (Soja hispida)

Rajae Abouelwafa, Soumia Amir, Salah Souabi, Peter Winterton, Victor Ndira, Jean-Claude Revel, Mohamed Hafidi, The fulvic acid fraction as it changes in the mature phase of vegetable oil-mill sludge and domestic waste composting, Bioresource Technology, Volume 99, Issue 14, September 2008, Pages 6112-6118, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.12.033.
(http://www.sciencedirect.com/science/article/B6V24-4RPKYK1-7/2/38942e9d5c6800281ba993c9eb05cee1)
Abstract:
Sludge resulting from the treatment of effluent from a vegetable oil mill, was composted mixed with domestic waste in a pile for five months. Different proportions of sludge and dry waste were mixed: M1 (1v/2v) and M2 (1v/1v). Monitoring different physical-chemical parameters showed the effect of the substrate on the microbiological activity and on the formation of fulvic acids, affecting the

maturity of the final compost. Elemental analysis revealed that the fulvic acids of mixes M1 and M2 presented very low concentrations of carbon, hydrogen, and oxygen and a high level of nitrogen. The FTIR spectroscopy results showed a decrease during composting of the intensity of absorbance of the easily assimilable compounds that are predominant in the initial mixtures i.e. the carbohydrates (1170-1080 cm-1) in M1 and long aliphatic chains (2920 cm-1) in M2. For mix M1 there was enrichment in compounds bearing oxygen-containing moieties. In M2 it was the nitrogen-containing compounds (in the form of stable amides) which predominated at the end of composting. The first component of PCA analysis, PC1, accounted for 83% of the difference between two distinct groups of parameters governing degradation and restructuration of the fulvic acids during composting. PC2 (17%) explained the variance due to the level of free or less polycondensed compounds in the two mixtures. Oxidised polyphenolic and polysaccharide structures were the least free, or most polycondensed, in the fulvic structures of M1. In M2 fulvic acids however, it was the polyphenols and peptide structures that were involved in the bonding, most likely of the polyphenol-peptide type.
Keywords: Oil-mill sludge; Domestic waste; Composting; Fulvic acid; Fats

Sontaya Krichnavaruk, Artiwan Shotipruk, Motonobu Goto, Prasert Pavasant, Supercritical carbon dioxide extraction of astaxanthin from Haematococcus pluvialis with vegetable oils as co-solvent, Bioresource Technology, Volume 99, Issue 13, September 2008, Pages 5556-5560, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.10.049.
(http://www.sciencedirect.com/science/article/B6V24-4RCP70W-4/2/ac433e5bd7391ba930af07bcd04250f8)
Abstract:
Soybean oil and olive oil were investigated as continuous co-solvents for supercritical carbon dioxide (SC-CO2) extraction of astaxanthin from Haematococcus pluvialis. Without co-solvents, only 25.40 +/- 0.79% efficiency was achieved with SC-CO2 extraction at 70 [degree sign]C and 40 MPa at a continuous flow rate of 3 mL min-1 for 5 h. In the presence of soybean oil or olive oil as a co-solvent, the extraction efficiency was enhanced, with the most appropriate level of soybean oil in the solvent mixture being 10% by volume. At this concentration and the above extraction conditions, the highest extraction efficiency of 36.36 +/- 0.79% was obtained for soybean oil, a 30% increase in extraction efficiency compared with SC-CO2 extraction without soybean oil, whereas the 10% olive oil increased the extraction efficiency further to 51.03 +/- 1.08%, which was comparable to that obtained using ethanol as co-solvent.
Keywords: High pressure extraction; Antioxidants; Carotenoids; Soybean oil; Olive oil

Antonio Cobo Molinos, Hikmate Abriouel, Rosario Lucas Lopez, Nabil Ben Omar, Eva Valdivia, Antonio Galvez, Inhibition of Bacillus cereus and Bacillus weihenstephanensis in raw vegetables by application of washing solutions containing enterocin AS-48 alone and in combination with other antimicrobials, Food Microbiology, Volume 25, Issue 6, September 2008, Pages 762-770, ISSN 0740-0020, DOI: 10.1016/j.fm.2008.05.001.
(http://www.sciencedirect.com/science/article/B6WFP-4SH0XX1-1/2/4761c4171097823d684ea9ff12efe26e)
Abstract:
Enterocin AS-48 is a broad-spectrum cyclic antimicrobial peptide produced by Enterococcus faecalis. In the present study, the bacteriocin was tested alone and in combination with other antimicrobials for decontamination of Bacillus inoculated on alfalfa, soybean sprouts and green asparagus. Washing with enterocin AS-48 solutions reduced viable cell counts of Bacillus cereus and Bacillus weihenstephanensis by 1.0-1.5 and by 1.5-2.38 log units right after application of treatment, respectively. In both cases, the bacteriocin was effective in reducing the remaining viable population below detection levels during further storage of the samples at 6 [degree sign]C, but failed to prevent regrowth in samples stored at 15 or 22 [degree sign]C. Application of washing

treatments containing enterocin AS-48 in combination with several other antimicrobials and sanitizers (cinnamic and hydrocinnamic acids, carvacrol, polyphosphoric acid, peracetic acid, hexadecylpyridinium chloride and sodium hypochlorite) greatly enhanced the bactericidal effects. The combinations of AS-48 and sodium hypochlorite, peracetic acid or hexadecylpyridinium chloride provided the best results. After application of the combined treatments on alfalfa sprouts contaminated with B. cereus or with B. weihenstephanensis, viable bacilli were not detected or remained at very low concentrations in the treated samples during a 1-week storage period at 15 [degree sign]C. Inhibition of B. cereus by in situ produced bacteriocin was tested by cocultivation with the AS-48 producer strain E. faecalis A-48-32 inoculated on soybean sprouts. Strain A-48-32 was able to grow and produce bacteriocin on sprouts both at 15 and 22 [degree sign]C. At 15 [degree sign]C, growth of B. cereus was completely inhibited in the cocultures, while a much more limited effect was observed at 22 [degree sign]C. The results obtained for washing treatments are very encouraging for the application of enterocin AS-48 in the decontamination of sprouts. Application of washing treatments containing AS-48 alone can serve to reduce viable cell counts of bacilli in samples stored under refrigeration, while application of combined treatments should be recommended to avoid proliferation of the surviving bacilli under temperature-abuse conditions.
Keywords: Bacillus cereus; Bacillus weihenstephanensis; Bacteriocins; Biopreservation; Vegetable foods; Sprouts

Maria V. Selma, Ana Allende, Francisco Lopez-Galvez, Maria A. Conesa, Maria I. Gil, Disinfection potential of ozone, ultraviolet-C and their combination in wash water for the fresh-cut vegetable industry, Food Microbiology, Volume 25, Issue 6, September 2008, Pages 809-814, ISSN 0740-0020, DOI: 10.1016/j.fm.2008.04.005.
(http://www.sciencedirect.com/science/article/B6WFP-4SBHX1N-1/2/fd284e58bfa7bb3a785674349cdcfd6c)
Abstract:
The purpose of this research was to investigate the disinfection efficacy of ozone (O3) and UV-C illumination (UV), and their combination (O3-UV) for reducing microbial flora of fresh-cut onion, escarole, carrot, and spinach wash waters collected from the industry. Furthermore, the influence of water physicochemical parameters on the decontamination efficacy and the effect of these technologies on physicochemical quality of wash water were analyzed. O3, UV, and O3-UV were effective disinfection treatments on vegetable wash water, with a maximum microbial reduction of 6.6 log CFU mL-1 after 60 min treatment with O3-UV. However, maximum total microbial reductions achieved by UV and O3 treatments after 60 min were 4.0 and 5.9 log CFU mL-1, lower than by O3-UV treatment. Furthermore, turbidity of wash water was reduced significantly by O3 and O3-UV treatments, while UV treatment did not affect the physicochemical quality of the water. Conclusions derived from this study illustrate that O3 and O3-UV are alternatives to other sanitizers used in the fresh-cut washing processes. The use of these technologies would allow less frequent changing of spent water and the use of much lower sanitizer doses. Nevertheless, in specific applications such as carrot wash water, where levels of undesirable microbial and chemical constituents are lower than other vegetable wash water, UV treatment could be an appropriate treatment considering cost-effectiveness criteria.
Keywords: Advanced oxidation processes; Decontamination; Sanitizing; Natural microflora; Foodborne pathogen

David L. Compton, Joseph A. Laszlo, Fred J. Eller, Scott L. Taylor, Purification of 1,2-diacylglycerols from vegetable oils: Comparison of molecular distillation and liquid CO2 extraction, Industrial Crops and Products, Volume 28, Issue 2, September 2008, Pages 113-121, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2008.01.010.
(http://www.sciencedirect.com/science/article/B6T77-4S3G9MY-2/2/d4088c3af05f82678cefd8ffb3a4853a)

Abstract:
High oleic sunflower oil (HOSO) and soybean oil (SBO) were partially deacylated by enzyme-catalyzed propanolysis using lipozyme TL IM to form 1,2-diacyl-sn-glycerols (1,2-DAG) in 40% yields. 1,2-DAG are of interest as potential regiospecific intermediates in the synthesis of structured lipids for cosmeceutical and nutriceutical applications. Two purification techniques were examined to determine which was the most efficient at removing the fatty acid propyl ester (FAPE) byproducts while limiting the spontaneous acyl migration of the 1,2-DAG to 1,3-diacyl-sn-glycerols (1,3-MAG) and adversely affecting the physical properties of the 1,2-DAG and FAPE. Molecular distillation of the partially deacylated vegetable oils was examined at temperatures ranging from 120 to 240 [degree sign]C. Molecular distillation at 220 [degree sign]C removed 77% of the FAPE byproduct but caused significant acyl migration. Additionally, the acid values and Lovibond color of the partially deacylated vegetable oils were deleteriously affected. The purity of the FAPE, contaminated by co-distillation of di- and mono-acylglycerol species as monitored by viscosity values and 1H NMR, was also compromised by the high temperature distillation. Distillations at lower temperatures improved the physical properties of the partially deacylated vegetable oils and the purity of the FAPE but at the sacrifice of the efficiency of FAPE removal. The mild condition of the liquid CO2 extraction afforded the most efficient removal of the FAPE, 96%, while causing no appreciable acyl migration, and resulted in acid values and Lovibond colors comparable to those obtained at the lowest molecular distillation temperatures studied.
Keywords: Alcoholysis; Acyl migration; 1,2-Diacylglycerols; Fatty acid propyl esters; Liquid CO2 extraction; Molecular distillation

M.K. Crepinsek, A. Wilson, R. Briefel, A National Study of School Food Environments and Policies School Food Policies Affect Fruit and Vegetable Consumption at School, Especially in Elementary Schools, Journal of the American Dietetic Association, Volume 108, Issue 9, Supplement 1, ADA 2008 Food & Nutrition Conference & Expo, ADA 2008 Food & Nutrition Conference & Expo, September 2008, Page A10, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.06.013.
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Jianwei Qin, Renfu Lu, Measurement of the optical properties of fruits and vegetables using spatially resolved hyperspectral diffuse reflectance imaging technique, Postharvest Biology and Technology, Volume 49, Issue 3, September 2008, Pages 355-365, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2008.03.010.
(http://www.sciencedirect.com/science/article/B6TBJ-4SH1HX0-1/2/dce7e1f8efbc956332997e304699d132)
Abstract:
This paper reports on the measurement of the optical properties of fresh fruits and vegetables over the visible and short-wave near-infrared region (500-1000 nm) using a spatially resolved steady-state diffuse reflectance technique. A hyperspectral imaging system in line scan mode was used to acquire spatially resolved diffuse reflectance images from the samples of apple (three varieties), peach, pear, kiwifruit, plum, cucumber, zucchini squash, and tomato (at three ripeness stages) over the spectral range of 500-1000 nm. The absorption and reduced scattering coefficients of the samples were determined from the spatially resolved scattering profiles using inverse algorithms for a diffusion theory model. Spectra of the absorption coefficient were featured by major pigments (chlorophyll, anthocyanin, and carotenoid) and water in the samples, whereas spectra of the reduced scattering coefficient generally decreased with the increase of wavelength. Values of the absorption and reduced scattering coefficients varied greatly among the test samples. Large differences in the absorption spectra were observed for the tomatoes of three ripeness stages (green, pink, and red), and their ripeness was correctly classified using the ratio of the absorption coefficient at 675 nm (for chlorophyll) to that at 535 nm (for anthocyanin). Values of the reduced scattering coefficient positively correlated with the firmness of tomatoes at individual wavelengths of 500-1000 nm, with the maximum correlation of 0.66 being obtained at 790 nm. Light penetration depths, defined as the depths at which the incident light was reduced by 99%, were estimated to

be between 0.97 and 6.52 cm for the fruit and vegetable samples over the wavelength range of 500-1000 nm; they were influenced by major pigments in the plant tissue. The spatially resolved steady-state diffuse reflectance technique provides a convenient and efficient means for measuring the optical properties of turbid food and agricultural products.
Keywords: Hyperspectral imaging; Spatially resolved spectroscopy; Diffuse reflectance; Optical properties; Diffusion theory model; Fruits; Vegetables; Light penetration depth

He Xu, Liping Zeng, Dekun Huang, Yuezhong Xian, Litong Jin, A Nafion-coated bismuth film electrode for the determination of heavy metals in vegetable using differential pulse anodic stripping voltammetry: An alternative to mercury-based electrodes, Food Chemistry, Volume 109, Issue 4, 15 August 2008, Pages 834-839, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.12.065.
(http://www.sciencedirect.com/science/article/B6T6R-4RJRVVV-3/2/9bac2cb2f31e60d93ab612b7458ef0af)
Abstract:
Mercury electrodes have been traditionally employed for achieving high reproducibility and sensitivity of the stripping technique. However, new alternative electrode materials are highly desired because of the toxicity of mercury. Bismuth is an electrode material characterized by its low toxicity and its ability to form alloys with some metals such as cadmium, lead and zinc, allowing their preconcentration at the electrode surface. In this work, we reported the simultaneous determination of Pb(II), Cd(II) and Zn(II) at the low [mu]g/l concentration levels by differential pulse anodic stripping voltammetry (DPASV) on a Nafion-coated bismuth film electrode (NCBFE) plated in situ, and investigated the application of NCBFE to heavy metals analysis in vegetable samples. The analytical performance of NCBFE was evaluated for simultaneous determination of Pb(II), Cd(II) and Zn(II) in non-deaerated solution, with the limits of determination of 0.30 [mu]g/l for Zn, 0.17 [mu]g/l for Cd and Pb at a preconcentration time of 180 s. High reproducibility for NCBFE was indicated from the relative standard deviations of 2.4% for Pb, 2.0% for Cd and 3.4% for Zn at the 15 [mu]g/l level (n = 15). The NCBFE was successfully applied to determine Pb and Cd in vegetable samples, and the results were in agreement with those of graphite furnace atomic absorption spectrometry (GFAAS).
Keywords: Nafion-coated bismuth film electrode; Anodic stripping voltammetry; Heavy metals

Gregory Evanylo, Caroline Sherony, John Spargo, David Starner, Michael Brosius, Kathryn Haering, Soil and water environmental effects of fertilizer-, manure-, and compost-based fertility practices in an organic vegetable cropping system, Agriculture, Ecosystems & Environment, Volume 127, Issues 1-2, August 2008, Pages 50-58, ISSN 0167-8809, DOI: 10.1016/j.agee.2008.02.014.
(http://www.sciencedirect.com/science/article/B6T3Y-4S80CMY-1/2/7f99c7d2e06e0bbb7dc337b7826d1a73)
Abstract:
Degraded soil quality, which decreases agricultural productivity and increases nonpoint source pollution of surface water, may be ameliorated by employing soil organic matter enhancing management, such as practiced by compost use in organic farming. The value of compost applied at rates lower than those required to supply crop nutrient needs requires investigation because applying compost at agronomic nitrogen rates may not be economically feasible for organic vegetable producers. We conducted field research during 2000-2002 on a Luvisol to compare the nutrient and non-nutrient effects of various rates and timings of mixed poultry litter-yard waste compost with a traditional organic fertilizer (poultry litter) and inorganic fertilizer on environmental soil attributes and water quality in an organic vegetable crop rotation. Soil organic C, total N, and available P increased 60%, 68%, and 225%, respectively, above the control with the application of 144 Mg ha-1 compost (dry wt.) during the 3-year study, but the low rate of compost (31 Mg ha-1)

did not affect soil C or N. Compost N mineralization was not synchronous with sweet corn N assimilation, resulting in excess root zone nitrate that would have posed a leaching risk without the use of a winter rye N-scavenging cover crop. The concentrations of nitrate N that leached below the tillage zone occasionally exceeded the 10 mg L-1 health standard but were not different among the agronomic rates of compost, poultry litter, fertilizer, and control treatments for nearly every sampling event. Despite increasing runoff water concentrations of N and P, the high compost rate reduced the amounts of N and P that were transported from the soil surface by five-fold and four-fold, respectively, compared to the inorganic fertilizer due to a four-fold reduction in runoff volume. Crop yields did not benefit from low compost rates during the 3-year duration of the study; however, improvements in some bulk density and porosity indicated that benefits of longer term, low compost rate additions may accrue over time.
Keywords: Carbon (C); Compost; Infiltration; Nitrogen (N); Organic matter; Phosphorus (P); Poultry litter; Runoff; Soil quality; Water quality

J. Pratoomyot, E.A. Bendiksen, J.G. Bell, D.R. Tocher, Comparison of effects of vegetable oils blended with southern hemisphere fish oil and decontaminated northern hemisphere fish oil on growth performance, composition and gene expression in Atlantic salmon (Salmo salar L.), Aquaculture, Volume 280, Issues 1-4, 1 August 2008, Pages 170-178, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2008.04.028.
(http://www.sciencedirect.com/science/article/B6T4D-4SBY4RB-1/2/e4a373504701207c5268ebb6033eb1e5)
Abstract:
Replacement of fish oil with sustainable alternatives, such as vegetable oil, in aquaculture diets has to be achieved without compromising the nutritional quality, in terms of n-3 highly unsaturated fatty acid (HUFA) content, of the product. This may be possible if the level of replacement is not too high and oil blends are chosen carefully but, if high levels of fish oil are substituted, a fish oil finishing diet prior to harvest would be required to restore n-3HUFA. However, a decontaminated fish oil would be required to avoid increasing undesirable contaminants. Here we test the hypotheses that blending of rapeseed and soybean oils with southern hemisphere fish oil will have a low impact upon tissue n-3HUFA levels, and that decontamination of fish oil will have no major effect on the nutritional quality of fish oil as a feed ingredient for Atlantic salmon. Salmon (initial weight ~ 0.8 kg) were fed for 10 weeks with diets in which 60% of fish oil was replaced with blends of soybean, rapeseed and southern hemisphere fish oil (SVO) or 100% decontaminated northern fish oil (DFO) in comparison with a standard northern fish oil diet (FO). Decontamination of the oil was a two-step procedure that included treatment with activated carbon followed by thin film deodorisation. Growth performance and feed efficiency were unaffected by either the SVO or DFO diets despite these having lower gross nutrient and fatty acid digestibilities than the FO diet. There were also no effects on the gross composition of the fish. Liver and, to a lesser extent flesh, lipid levels were lower in fish fed the SVO blends, due to lower proportions of neutral lipids, specifically triacylglycerol. Tissue lipid levels were not affected in fish fed the DFO diet. Reflecting the diet, flesh eicosapentaenoic acid (EPA) and total n-3 fatty acids were higher, and 18:1n-9 lower, in fish fed DFO than FO, whereas there were no differences in liver fatty acid compositions. Flesh EPA levels were only slightly reduced from about 6% to 5% although docosahexaenoic acid (DHA) was reduced more severely from around 13% to about 7% in fish fed the SVO diets. In contrast, the liver fatty acid compositions showed higher levels of n-3 HUFA, with DHA only reduced from 21% to about 18% and EPA increased from under 8% to 9-10% in fish fed the SVO diets. The evidence suggested that increased liver EPA (and arachidonic acid) was not simply retention, but also conversion of dietary 18:3n-3 and 18:2n-6. Increased HUFA synthesis was supported by increased hepatic expression of fatty acyl desaturases in fish fed the SVO diets. Flesh n-3HUFA levels and desaturase expression was significantly higher in fish fed soybean oil than in fish fed rapeseed oil. In conclusion, partial replacement of fish oil with blends of vegetable oils and southern hemisphere

fish oil had minimal impact on HUFA levels in liver, but a greater effect on flesh HUFA levels. Despite lower apparent digestibility, decontamination of fish oil did not significantly impact its nutritional quality for salmon.
Keywords: Fish oil; Vegetable oil; Growth performance; Composition; Contaminants; Atlantic salmon; Salmo salar

M. Obopile, D.C. Munthali, B. Matilo, Farmers' knowledge, perceptions and management of vegetable pests and diseases in Botswana, Crop Protection, Volume 27, Issue 8, August 2008, Pages 1220-1224, ISSN 0261-2194, DOI: 10.1016/j.cropro.2008.03.003.
(http://www.sciencedirect.com/science/article/B6T5T-4SFR7J2-1/2/ed3263eeb6fe1bc49254d5104a75143e)
Abstract:
Vegetable farmers' knowledge and perceptions of pests, diseases and pest management practices were investigated by interviewing 112 growers in Botswana between April and June 2004. Most of the farmers grew brassicae crops, Swiss chard and tomato, and considered arthropod pest problems as the major constraint to vegetable production. Bagrada hilaris Burm., Plutella xylostella L. and Brevicoryne barassicae L. were the most serious pests on brassicas, with red spidermites (Tetranychus spp.) being the most serious pests on tomato. Ninety-eight percent of farmers relied heavily on the use of synthetic pesticides to control these pests. Their decision to apply pesticides was mostly on noticing the presence of a pest or disease. An integrated pest management programme is needed to reduce over reliance on pesticides.
Keywords: Perceptions; Knowledge; Vegetables; Pest management; Pesticides; Pests

A. Daryani, G.H. Ettehad, M. Sharif, L. Ghorbani, H. Ziaei, Prevalence of intestinal parasites in vegetables consumed in Ardabil, Iran, Food Control, Volume 19, Issue 8, August 2008, Pages 790-794, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2007.08.004.
(http://www.sciencedirect.com/science/article/B6T6S-4PF1WC9-4/2/9506d433c7e1b89c2ad8a42f4c8faca3)
Abstract:
Fresh vegetables are an important part of a healthy diet. In recent years there has been an increase in the number of reported cases of food-borne illness linked to fresh vegetables. The consumption of raw vegetables is a major way in the transmission of parasitic contaminations. The goal of this study was to determine the parasitological contamination of vegetables sold at markets and obtained from gardens. A total of 141 samples from different vegetables were randomly selected from the markets and gardens (markets: 96; gardens: 45) and then were examined by a concentration method. Each sample was washed with water, allowing sedimentation at room temperature for 24 h. Five ml of sediment were centrifuged at 3000 rpm for 5 min. Sediment was examined in lugol stained slides through light microscopy. Fifty percent (48/96) of markets vegetables and 71% (32/45) of gardens vegetables were contaminated with different parasites. Prevalences of pathogenic parasites in vegetables of markets and gardens were 25% and 29%, respectively. Parasites detected were Giardia cysts (7%), Dicrocoelium eggs (6%), Fasciola eggs (5%) and Ascaris eggs (2%). In regard to results of this study, the importance of vegetables in the transmission of intestinal parasites in stressed, and it is necessary to improve the sanitary conditions of these kinds of food.
Keywords: Intestinal parasites; Vegetables; Iran

Patricia Elizaquivel, Rosa Aznar, A multiplex RTi-PCR reaction for simultaneous detection of Escherichia coli O157:H7, Salmonella spp. and Staphylococcus aureus on fresh, minimally processed vegetables, Food Microbiology, Volume 25, Issue 5, August 2008, Pages 705-713, ISSN 0740-0020, DOI: 10.1016/j.fm.2008.03.002.

(http://www.sciencedirect.com/science/article/B6WFP-4S0PK86-2/2/8d39775f5f0fc093d25cb6f028a87a84)

Abstract:
In this work, a new multiplex single-tube real-time PCR approach is presented for the detection of Escherichia coli O157:H7, Salmonella spp. and Staphylococcus aureus, three of the more frequent food-borne bacterial pathogens that are usually investigated in a variety of food matrices. The study includes the design and specificity testing, of a new primer and probe specific for Salmonella spp. Reaction conditions were adjusted for the simultaneous amplification and detection of specific fragments in the [beta]-glucuronidase (uidA, E. coli) and Thermonulease (nuc, Sta. aureus) genes, and in the replication origin sequence (oriC, Salmonella spp.). Melting-curve analysis using a SYBR Green I RTi-PCR approach showed characteristic Tm values demonstrating the specific and efficient amplification of the three fragments. Subsequently, a TaqMan RTi-PCR approach was settled, using FAM, NED and VIC fluorescently labelled specific probes for an automated detection. It was equally sensitive than uniplex RTi-PCR reactions in Sta. aureus and E. coli O157:H7, using same amounts of purified DNA, and allowed detection of 10 genome equivalents in the presence of 102 or 104 genome equivalents of the other two pathogens. Finally, it was tested in artificially inoculated fresh, minimally processed vegetables, revealing a sensitivity of 103 CFU g-1 each of these pathogens in direct detection, following DNA extraction with DNeasy Tissue Kit (Qiagen). The multiplex RTi-PCR developed scored the sensitivity recognised for PCR in food and it allows a high-throughput and automation, thus it is promising as a rapid and cost-effective test for the food industry.
Keywords: Multiplex RTi-PCR; E. coli O157:H7; Sta. aureus; Salmonella

Chih-Yao Hou, Yeong-Shenn Lin, Yuh Tai Wang, Chii-Ming Jiang, Ming-Chang Wu, Effect of storage conditions on methanol content of fruit and vegetable juices, Journal of Food Composition and Analysis, Volume 21, Issue 5, August 2008, Pages 410-415, ISSN 0889-1575, DOI: 10.1016/j.jfca.2008.04.004.
(http://www.sciencedirect.com/science/article/B6WJH-4SDPX6D-C/2/24ae2ed1ec77c4bea90bfbbb6ad83f9e)

Abstract:
Methanol contents of fresh squeezed juices from 10 fruits and 5 vegetables were determined and the relation of methanol release from stored juices on the physico-chemical properties including degree of esterification (DE), total pectin content, pH value, titratable acidity and the hydrolytic activities of pectinesterase (PE), polygalacturonase (PG), cellulase (CE) and pectate lyase (PAL) of fresh squeezed juices were investigated. The range of methanol content in fresh squeezed juices of fruits and vegetables were 1.14-6.77 and 2.04-10.92 mg/100 mL, respectively, but increased to 1.13-14.82 and 4.73-24.08 mg/100 mL after 3 h storage. In most of the juices, the increase of methanol content was significant ($p<0.05$) after 3 h storage, except grape (4 and 30 [degree sign]C), guava (4 [degree sign]C), lemon (4 and 30 [degree sign]C), and star fruit (4 [degree sign]C). The methanol levels above 10 mg/100 mL (the given limit of alcoholic beverages) were found in fresh tomato juices (squeezed and stored) and several other stored juices including pea shoot juices (after 60 min storage), star fruit juices (after 180 min storage), papaya juices (after 180 min storage), pineapple juices (after 180 min storage) and Valencia orange (after 30 min storage), and alfalfa sprout juices (after 60 and 120 min storages for 4 and 30 [degree sign]C, respectively). After analyzing with multiple regressions, methanol release was positively associated with enzyme activities of PE and PAL, while negatively associated with total pectin content in fruit juices. In vegetable juices, methanol release was positively associated with PE activity, pH value and titratable acidity, while negatively associated with PG activity.
Keywords: Methanol; Fruit; Vegetable; Juice; Storage; Food safety and quality; Methanol safety limit; Taiwan; Food composition; Food analysis

Celestine N Okoye, Jihai Jiang, Liu Yu Hui, Design and development of secondary controlled industrial palm kernel nut vegetable oil expeller plant for energy saving and recuperation, Journal of Food Engineering, Volume 87, Issue 4, August 2008, Pages 578-590, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.01.030.
(http://www.sciencedirect.com/science/article/B6T8J-4RR1NK9-2/2/fa30d7a1d05b9c6bae3bd4406c689c7e)
Abstract:
This paper presents an experimental work on energy saving and recuperation in secondary controlled industrial palm nut vegetable oil plant. It employs the hydrostatic constant pressure rail principle to accomplish crushing, pressing and filtering operations. The seed crushing and oil expelling operations are based on pressure differential between the fed seeds and discharged mash resulting in an oil recovery efficiency of 97.1%, energy saving of 53.48 KW during cylinder retraction and the reduction in barrel temperature from 203 to 187 [degree sign]C which was effected through cooling pipes. The plant consists of an oil expeller, a filter press, and a conveyor unit and works on a single feed, single stage compression principle with a throughput capacity of 30 kg/h and effective capacity of 16 kg/h. The plant mathematical model is derived and simulation on flow through hydraulic transformer performed using SIMULINK. The experimental results not only agree with theoretical analysis but also appears to be very efficient in energy saving and recuperation.
Keywords: Secondary control; Energy saving; Constant pressure rail; Hydraulic accumulator; Screw press; Oil extraction

Randi L. Wolf, Stephen J. Lepore, Jonathan L. Vandergrift, Lindsay Wetmore-Arkader, Elizabeth McGinty, Gabriel Pietrzak, Amy L. Yaroch, Knowledge, Barriers, and Stage of Change as Correlates of Fruit and Vegetable Consumption among Urban and Mostly Immigrant Black Men, Journal of the American Dietetic Association, Volume 108, Issue 8, August 2008, Pages 1315-1322, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.05.011.
(http://www.sciencedirect.com/science/article/B758G-4T25TH5-9/2/a7e859b0f249e7737264e58239dc1387)
Abstract: Background
Daily fruit and vegetable consumption in black men is low and has remained relatively unchanged during the past 20 years.Objective
To examine awareness of fruit and vegetable recommendations promoted by federal agencies and correlates of fruit and vegetable consumption among an urban and mostly immigrant population of adult black men.Design
A cross-sectional study analyzing baseline data (n=490) from a randomized controlled trial.Setting
A large health care worker's union.Main outcome measures
Knowledge, perceived benefits, stage of readiness, perceived barriers, and daily servings of fruit and vegetable intake.Statistical analyses performed
One-way analysis of variance and t tests were used to compare fruit and vegetable intake across main study variables. Regression analysis was used to identify independent predictors of fruit and vegetable intake.Results
Fruit and vegetable intake was low (mean was three servings/day). Ninety-four percent were not aware that men should consume at least nine servings of fruits and vegetables daily and 59.8% were not aware that eating a colorful variety is important. In contrast, over half (54.7%) were aware that a single serving is equal to about a handful; 94.1% correctly reported fruit and vegetables as an important source of fiber; 79.6% correctly reported vitamin pills were not a substitute for eating fruits and vegetables; and 94.5% recognized that there are health benefits to eating fruits and vegetables, although identification of specific benefits was minimal. In regression analysis, a greater level of fruit and vegetable consumption was significantly associated with greater knowledge of fruit and vegetable recommendations, lower perceived barriers, and a more

advanced stage of change (action vs contemplation/preparation). Perceived health benefits were not associated with fruit and vegetable consumption.Conclusions
There is a lack of awareness of the current fruit and vegetable recommendations. In addition, men reported fruit and vegetable intakes that were far below national recommendations. Greater efforts are needed to help urban and primarily immigrant black men realize the importance of and recommendations for fruit and vegetable consumption.

Zhao-Hui LIU, Li-Hua JIANG, Xiao-Lin LI, R. HARDTER, Wen-Jun ZHANG, Yu-Lan ZHANG, Dong-Feng ZHENG, Effect of N and K Fertilizers on Yield and Quality of Greenhouse Vegetable Crops, Pedosphere, Volume 18, Issue 4, August 2008, Pages 496-502, ISSN 1002-0160, DOI: 10.1016/S1002-0160(08)60040-5.
(http://www.sciencedirect.com/science/article/B82XV-4SVKMMS-9/2/5ae3dbd783aa51a4114d0b495aaa8bdf)
Abstract:
The application of large amounts of fertilizers, a conventional practice in northern China for the production of vegetable crops, generally leads to substantial accumulation of soil nutrients within a relatively short period of time. A fixed field experiment was designed to study the effects of nitrogen (N) and potassium (K) fertilizers applied to optimize the yield and quality of typical vegetable crops. Application of N and K fertilizers significantly increased the yields of kidney bean. The largest yields were obtained in the first and second years after application of 1 500 kg N and 300 kg K2O ha-1. In the third year, however, there was a general decline in yields. Maximum yields occurred when intermediate rates of N and K (750 kg N and 300 kg K2O ha-1) were applied. However, no significant differences were observed in the concentrations of vitamin C (VC) in kidney bean among different years and various rates of fertilizer treatments. Yields of tomato grown in rotation after kidney bean showed significant responses to the application of N and K in the first year. In the second year, the yields of tomato were much lower. This suggested that the application of N fertilizer did not have any effect upon tomato yield, whereas application of K fertilizer did increase the yield. Application of K fertilizer was often associated with increased sugar concentrations.
Keywords: K fertilizer; N fertilizer; protected cultivation; vegetable quality; vegetable yield

Niels Skovgaard, Charles L. Wilson, Editor, Intelligent and Active Packaging for Fruit and Vegetables, CRC Press (2007) xiiii + 336 pages, hardback, UK [pound sign] 179,95, ISBN 0849391660; www.crcpress.com., International Journal of Food Microbiology, Volume 125, Issue 3, 31 July 2008, Page 362, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2008.05.024.
(http://www.sciencedirect.com/science/article/B6T7K-4SKB37X-5/2/76a1bcc0991940c5b996ffb244452543)

K. Suvardhan, K. Suresh Kumar, D. Rekha, K. Kiran, B. Jaya raj, G. Krishna murthy Naidu, P. Chiranjeevi, Erratum to 'Selenium determination in various vegetable samples by spectrophotometry' [Food Chem. 103 (3) (2007) 1044-1048], Food Chemistry, Volume 109, Issue 2, 15 July 2008, Page 476, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2008.01.016.
(http://www.sciencedirect.com/science/article/B6T6R-4RMNYM1-C/2/17b8b6e3697dca9337b9ca21eab2ebf0)

S.M. Smukler, L.E. Jackson, L. Murphree, R. Yokota, S.T. Koike, R.F. Smith, Transition to large-scale organic vegetable production in the Salinas Valley, California, Agriculture, Ecosystems & Environment, Volume 126, Issues 3-4, July 2008, Pages 168-188, ISSN 0167-8809, DOI: 10.1016/j.agee.2008.01.028.
(http://www.sciencedirect.com/science/article/B6T3Y-4S6GRGX-1/2/50e49c014b526ce194d940ee13df7423)

Abstract:
Studying the management strategies suited to large-scale organic production, particularly during the mandated 3-year transition period from conventional management, is a unique research challenge. Organic production traditionally relies on small, diverse plantings and complex management responses to cope with soil fertility and pest pressures, so research should represent decision-making options of an organic grower at the farm scale. This study analyzes crop, soil, pest and management changes during the organic transition period on two ranches (40 and 47 ha) in the Salinas Valley, California in cooperation with a large conventional vegetable producer, Tanimura and Antle, Inc. Permanent transects were established across the two ranches at the onset of adoption of organic practices, and soil and plants were sampled at harvest of almost all crops, while all management operations were recorded by the co-operator. The ~10 ha blocks were divided into many small plantings, and 17 different cash crop and cover crop species were planted during the transition period. Management inputs consisted of a range of organic fertilizers and amendments, sprinkler and drip irrigation, cultivation and hand-hoeing, and several types of organic pesticides. Results from the 3-year period followed these general trends: increase in soil biological indicators (microbial biomass and arbuscular mycorrhizae), low soil nitrate pools, adequate crop nutrients, minor disease and weed problems, and sporadic mild insect damage. Multivariate statistical analyses indicated that some crops and cultivars consistently produced higher yields than others, relative to the maximum yield for a given crop. Multi-factor contingency tables showed clear differences in insect and disease damage between crop taxa. Although Tanimura and Antle, Inc. used some of the principles of organic farming (e.g., crop diversity, crop rotation, and organic matter (OM) management), they also relied on substitution-based management, such as fertigation with soluble nutrients, initially heavy applications of organic pesticides, and use of inputs derived from off-farm sources. Their initial production of a large number of crop taxa in small plantings at staggered intervals proved to be an effective strategy for avoiding risks from low yields or crop failure and allowed them to move towards a smaller number of select, successful crops towards the end of the transition. This study demonstrates the feasibility of large-scale producers to transition to organic practices in a manner that was conducive to both production goals and environmental quality, i.e., increased soil C pools, low soil nitrate, and absence of synthetic pesticides.
Keywords: Organic; Transition; Soil; Cropping systems; Regression trees; Canonical correspondence analysis

Kristine Vejrup, Nanna Lien, Knut-Inge Klepp, Elling Bere, Consumption of vegetables at dinner in a cohort of Norwegian adolescents, Appetite, Volume 51, Issue 1, July 2008, Pages 90-96, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.12.004.
(http://www.sciencedirect.com/science/article/B6WB2-4RDS3W4-2/2/9882158940cbd99c2b803e1a39582069)
Abstract:
This longitudinal study examined the frequency of consumption of vegetables for dinner by Norwegian adolescents and their parents. Associations of perceived availability, correlations and stability were explored. The longitudinal cohort consist of 1950 adolescents attending 6th/7th (2002) and 9th/10th (2005) grade, and their parents (n = 1647). Only 40% of the adolescents and 60% of the adults reported to have eaten vegetables for dinner yesterday, the reported frequency of vegetables for dinner were 3.7 and 4.1 times/week in 2002 and 2005, respectively, and 4.8 times/week for parents. Girls ate more than boys, and high SES adolescents ate more than low SES adolescents. There were significant differences between adolescent and parent report of both frequency of consumption and perceived availability of vegetables for dinner. Adolescent's frequency of consumption of vegetables was related to the parent's consumption, and the adolescent response from 2002 to 2005 showed strong correlations. There were good tracking in the frequency of consumption of vegetables for dinner, and 25% of the adolescents showed a

stable high frequency. To conclude, few adolescents and their parents consumed vegetables for dinner. Interventions are needed to meet the recommendations, and parents should be targeted in intervention programs.
Keywords: Adolescents; Vegetables; Dinner; Stability; Availability

Om Prakash, Mahe Talat, Syed Hadi Hasan, Rajesh K. Pandey, Enzymatic detection of mercuric ions in ground-water from vegetable wastes by immobilizing pumpkin (Cucumis melo) urease in calcium alginate beads, Bioresource Technology, Volume 99, Issue 10, July 2008, Pages 4524-4528, ISSN 0960-8524, DOI: 10.1016/j.biortech.2007.08.073.
(http://www.sciencedirect.com/science/article/B6V24-4PYJF01-1/2/0759c3aead4e0f9e2ef8198148158031)
Abstract:
Present report describes a quick and simple test based on enzyme inhibition for the detection of mercury in aqueous medium by urease immobilized in alginate beads. Urease was extracted from the discarded seeds of pumpkin (Cucumis melo) and was purified to apparent homogeneity (5.2-fold) by heat treatment at 48 +/- 0.1 [degree sign]C and gel filtration through Sephadex G-200. The homogeneous enzyme preparation (Sp activity 353 U/mg protein, A280/A260 = 1.12) was immobilized in 3.5% alginate leading to 86% immobilization. Effect of mercuric ion on the activity of soluble as well as immobilized enzyme was investigated. Hg2+ exhibited a concentration-dependent inhibition both in the presence and absence of the substrate. The alginate immobilized enzyme showed less inhibition. There was no leaching of the enzyme over a period of 15 days at 4 [degree sign]C. The inhibition was non-competitive and the Ki was found to be 1.26 x 10-1 [mu]M. Time-dependent interaction of urease with Hg2+ exhibited a biphasic inhibition behavior in which approximately half of the initial activity was lost rapidly (within 10 min) and reminder in a slow phase. Binding of Hg2+ with the enzyme was largely irreversible, as the activity could not be restored by dialysis. The significance of the observations is discussed.
Keywords: Urease; Pumpkin; Cucumis melo; Hg2+ ions; Calcium alginate beads

Desiree Cole, Vegetable Diseases--A Colour Handbook, Steven Koike, Peter Gladders, Albert Paulus. Manson Publishing, UK, <www.mansonpublishing.com>. 2007, 320pp., [pound sign]95.00, ISBN: 978-1-84076-075-0., Crop Protection, Volume 27, Issue 7, July 2008, Page 1155, ISSN 0261-2194, DOI: 10.1016/j.cropro.2007.11.015.
(http://www.sciencedirect.com/science/article/B6T5T-4RSRPSF-1/2/2080736bd001a102d0d239c0c27517d8)

Nele Geeroms, Wim Verbeke, Patrick Van Kenhove, Health advertising to promote fruit and vegetable intake: Application of health-related motive segmentation, Food Quality and Preference, Volume 19, Issue 5, July 2008, Pages 481-497, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2008.02.004.
(http://www.sciencedirect.com/science/article/B6T6T-4RWH88B-1/2/a8cbfcbd269e86a4b0e273507a9bb219)
Abstract:
The purpose of this study was to identify subgroups within a population on the basis of their health-related motive orientations (HRMO). Participants were 615 consumers between the ages of 17 and 77, drawn from the Dutch-speaking part of Belgium. They provided ratings of 45 health statements referring to people's motives for health, i.e., those things that give health meaning. We also obtained information on daily intake of fresh fruits and vegetables (F&V) by using a short food frequency scale. In addition, we asked the respondents to provide evaluative ratings of four targeted F&V health advertisements, which differed from each other on two dimensions, i.e., message tonality (informational vs. transformational) and directionality (self-directed vs. other-directed). As a benchmark, we used an existing Belgian public health campaign that had a more

general character. Based on a two-step cluster analysis, we identified 5 distinct subgroups in the sample, with different HRMO: health is about energy (Energetic Experimenters), emotional well-being (Harmonious Enjoyers), social responsibility (Normative Carers), management/outward appearance (Conscious Experts) and physical well-being/functionality (Rationalists). Besides differences in (category-specific) F&V consumption among these segments, also different types of advertising messages are appropriate for each of the subgroups, i.e., transformational/self-directed for the Energetic Experimenters, transformational/other-directed for the Harmonious Enjoyers, informational/other-directed for the Normative Carers and informational/self-directed for the Conscious Experts/Rationalists. Moreover, the segments provided more positive evaluations of the most appropriate targeted advertisement compared to the benchmark advertisement, which stresses the benefits of targeted F&V advertising strategies over and above more general messages.
Keywords: Advertising; Consumer; Fruit and vegetables; Health; Motive; Segmentation

Tom Baranowski, Kathy Watson, Mariam Missaghian, Alison Broadfoot, Karen Cullen, Theresa Nicklas, Jennifer Fisher, Janice Baranowski, Sharon O'Donnell, Social Support Is a Primary Influence on Home Fruit, 100% Juice, and Vegetable Availability, Journal of the American Dietetic Association, Volume 108, Issue 7, July 2008, Pages 1231-1235, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.04.016.
(http://www.sciencedirect.com/science/article/B758G-4SV7KCR-10/2/17177cabbf5a45b66fb11df41e04aa76)
Abstract:
Children tend to eat more fruit and vegetables when more are available in the home. We proposed and tested a model that predicts the availability at home (hereinafter termed 'home availability') of fruit, 100% juice, and vegetables, using new measures of frequency of food shopping, purchase, and comparative purchase outcome expectancies (ie, the perceived benefits and costs of purchasing fruit and vegetables), home food pantry management practices, family social support for purchasing fruit and vegetables, food shopping practices, and body mass index (BMI). Participants (N=98) were recruited in 2004 in front of grocery stores and completed two telephone interviews. Cross-sectional hierarchical regression was employed with backward deletion of nonsignificant variables. Despite many statistically significant bivariate correlations between the new variables and home fruit, 100% juice, and vegetable availability, social support was the primary predictor of home fruit availability in multivariate regression. BMI and home 100% juice pantry management were the primary predictors of home 100% juice availability. Social support, BMI, and shopping practices were the primary predictors of home vegetable availability. Social support for purchasing fruit, 100% juice, and vegetables was an important, consistent predictor of home availability. These findings need to be replicated in larger samples.

Ekaterini Riga, Lawrence A. Lacey, Neussa Guerra, Muscodor albus, a potential biocontrol agent against plant-parasitic nematodes of economically important vegetable crops in Washington State, USA, Biological Control, Volume 45, Issue 3, June 2008, Pages 380-385, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2008.01.002.
(http://www.sciencedirect.com/science/article/B6WBP-4RJYV69-2/2/406af32d1c70973e57a433eba0ecf554)
Abstract:
The fungus, Muscodor albus, was tested for nematicidal and nematostatic potential against four plant-parasitic nematode species with three different feeding modes on economically important vegetable crops in the Pacific Northwest. Meloidogyne chitwoodi, Meloidogyne hapla, Paratrichodorus allius, and Pratylenchus penetrans were exposed for 72 h to volatiles generated by M. albus cultured on rye grain in sealed chambers at 24 [degree sign]C in the laboratory. In addition, the nematodes were inoculated into soil fumigated with M. albus, and incubated for 7

days prior to the introduction of host plants under greenhouse conditions. The mean percent mortality of nematodes exposed to M. albus in the chamber was 82.7% for P. allius, 82.1% for P. penetrans, and 95% for M. chitwoodi; mortality in the nontreated controls was 5.8%, 7%, and 3.9%, respectively. Only 21.6% of M. hapla juveniles died in comparison to 8.9% in controls. However, 69.5% of the treated juveniles displayed reduced motility and lower response to physical stimulus by probing, in comparison to the control juveniles. This is evidence of nematostasis due to M. albus exposure. The greenhouse study showed that M. albus caused significant reduction to all nematode species in host roots and in rhizosphere soil. The percent mortality caused by M. albus applied at 0.5% and 1.0% w/w in comparison to the controls was as follows: 91% and 100% for P. allius in the soil; 100% for P. penetrans in bean roots and soil; 85% and 95% for M. chitwoodi in potato roots, and 56% and 100% in the soil; 100% for M. hapla both in pepper roots and soil. In this study, M. albus has shown both nematostatic and nematicidal properties.
Keywords: Biological control; Muscodor albus; Meloidogyne chitwoodi; Meloidogyne hapla; Nematicidal; Nematostatic; Paratrichodorus allius; Pratylenchus penetrans; Vegetable crops

Bushra Sultana, Farooq Anwar, Flavonols (kaempeferol, quercetin, myricetin) contents of selected fruits, vegetables and medicinal plants, Food Chemistry, Volume 108, Issue 3, 1 June 2008, Pages 879-884, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.11.053.
(http://www.sciencedirect.com/science/article/B6T6R-4R7RS9M-6/2/d3df1e45834da9f210b725ca0c9827a7)
Abstract:
The concentrations of flavonols (kaempeferol, quercetin, myricetin) were determined in 22 plant materials (9 vegetables, 5 fruits, and 8 medicinal plant organs). The materials were extracted with acidified methanol (methanol/HCl, 100:1, v/v) and analyzed by reverse phase high-performance liquid chromatographic (RP-HPLC) with UV detection. The total flavonols contents varied significantly ($P < 0.05$) among vegetables, fruits and medicinal plant organs ranged from 0 to 1720.5, 459.9 to 3575.4, and 2.42 to 6125.6 mg kg-1 of dry matter, respectively. Among vegetables, spinach and cauliflower exhibited the highest amounts of flavonols (1720.5 and 1603.9 mg kg-1, respectively), however, no flavonols were detected in garlic. Within fruits, highest level of flavonols was observed in strawberry (3575.4 mg kg-1), whereas, the lowest in apple fruit (459.9 mg kg-1). Of the medicinal plant organs, moringa and aloe vera leaves contained the highest contents of flavonols (6125.6 and 1636.04 mg kg-1), respectively, whereas, lowest was present in barks (2.42-274.07 mg kg-1). Overall, leafy green vegetables, soft fruits and medicinal plant leaves exhibited higher levels of flavonols.
Keywords: Plant materials; Anti-oxidants; Extraction/hydrolysis; RP-HPLC; Flavonols

Ana Martinho, Henrique A. Matos, Rafiqul Gani, Bent Sarup, William Youngreen, Modelling and simulation of vegetable oil processes, Food and Bioproducts Processing, Volume 86, Issue 2, ECCE-6, June 2008, Pages 87-95, ISSN 0960-3085, DOI: 10.1016/j.fbp.2008.03.009.
(http://www.sciencedirect.com/science/article/B8JGD-4SJ957R-1/2/490ffeb66ffd5b57c398030c4630f076)
Abstract:
A solvent-based extraction process for the production of vegetable oil from soybean has been studied with special emphasis on the solvent recovery section of the process. This solvent recovery section includes four parts: an oil recovery, a condensation system, a mineral oil system and a water-solvent separation. The main compounds representing the vegetable oil (soybean oil) usually consist of triglycerides, free fatty acids, tocopherols and sterols. The ICAS-ProPred software, an Integrated Computer Aided System developed by CAPEC, has been used to generate the pure compound data and insert them into the database of a commercial simulator (PRO-II). A process model has been developed and validated by matching steady state simulation results from this model with available industrial data. The validated process model has been used

to optimize the efficiency of solvent recovery by adjusting operational variables such as pressure and temperature. The paper highlights the modelling and simulation steps together with a sensitivity analysis for the search for an optimal solution of the process in terms of solvent recovery.
Keywords: Modelling; Simulation; Validation; Sensitivity analysis; Solvent-based extraction; Vegetable oil

A. Mizrach, Ultrasonic technology for quality evaluation of fresh fruit and vegetables in pre- and postharvest processes, Postharvest Biology and Technology, Volume 48, Issue 3, June 2008, Pages 315-330, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.018.
(http://www.sciencedirect.com/science/article/B6TBJ-4RW4RXN-1/2/b5a54cca4aa82c0ab62c19282a07337f)
Abstract:
Increasing public demands for improved quality of fruit and vegetables in the fresh market and the food industry, and growers' expectations of high prices for premium quality products, raise the necessity for fast, accurate, and objective methods for measuring and monitoring product quality along the chain of pre- and postharvest processes, from the field to the consumer. Ultrasound technology provides one of the foundations for a non-destructive, fast and reliable technique for correlating specific quality-related indices and characteristics of fruit and vegetables with the stages of development during growth and maturation, and in the course of storage and shelf-life, until they are ready for consumption. This review summarizes the last two decades of studies, adaptation, modification, and innovation of ultrasound technology and devices for determination of material properties of fresh fruit and vegetable tissues, in both pre- and postharvest applications. Included are descriptions of the various methods of ultrasonic measurement, the equipment, the procedures for data processing and correlating the measurements of ultrasound parameters with quality indices of fruit and vegetables in the course of the various pre- and postharvest processes. It is concluded that much progress has been made in these fields during recent years.
Keywords: Shelf-life; Ripeness; Firmness; Attenuation

Daniel N. Sila, Thomas Duvetter, Ans De Roeck, Isabel Verlent, Chantal Smout, Graham K. Moates, Brian P. Hills, Keith K. Waldron, Marc Hendrickx, Ann Van Loey, Texture changes of processed fruits and vegetables: potential use of high-pressure processing, Trends in Food Science & Technology, Volume 19, Issue 6, NovelQ - High Pressure Processing, June 2008, Pages 309-319, ISSN 0924-2244, DOI: 10.1016/j.tifs.2007.12.007.
(http://www.sciencedirect.com/science/article/B6VHY-4RDS414-1/2/c4e1cca88c71fa99173637dbf499cb3b)
Abstract:
In processed fruits and vegetables, changes in texture are strongly related to transformations in cell wall polymers due to enzymatic and non-enzymatic reactions. A major challenge is how to use recent advances in processing technologies and to adjust raw materials, ingredients and processes to improve texture of processed plant based foods.
This review focuses on the plant cell wall structure and the processing dependent changes in plant cell walls with focus on enzymatic and non-enzymatic degradation of pectin. Stability as well as catalytic activity of two major plant endogenous pectin degrading enzymes, namely pectinmethylesterase and polygalacturonase, towards elevated pressure and temperature is reviewed. Finally, the effect of processing on texture of plant based foods and different approaches to improve the texture of processed plant based foods (i.e. preheating, phenolics, washing/dipping/infusion pretreatments, high-pressure pretreatments and genetic modification) are discussed.

Indrawati Oey, Martina Lille, Ann Van Loey, Marc Hendrickx, Effect of high-pressure processing on colour, texture and flavour of fruit- and vegetable-based food products: a review, Trends in Food Science & Technology, Volume 19, Issue 6, NovelQ - High Pressure Processing, June 2008, Pages 320-328, ISSN 0924-2244, DOI: 10.1016/j.tifs.2008.04.001.
(http://www.sciencedirect.com/science/article/B6VHY-4S80XFG-2/2/49e3dc3e0c858d96408b8e6d6a6d2011)
Abstract:
Colour, flavour and texture are important quality characteristics of fruits and vegetables and major factors affecting sensory perception and consumer acceptance of foods. Various processing methods are used not only to increase the edibility and palatability of fruits and vegetables but also to prolong their shelf life. High-pressure (HP) processing is an interesting alternative to traditional food processing and preservation methods due to its limited effects on covalent bonds resulting in minimal modifications in nutritional and sensory quality. This review focuses specifically on the effects of HP treatment on colour, flavour and texture of fruit- and vegetable-based foods and tries to elucidate the mechanisms behind the observed changes in quality attributes. Possible impacts of HP treatments at elevated temperatures on these sensory properties are also highlighted since the temperature regime used for research on high pressure (HP) has been extended to elevated temperatures in order to achieve spore inactivation (e.g. HP sterilization).

Pim-pahn Kiatsimkul, Galen J. Suppes, Fu-hung Hsieh, Zuleica Lozada, Yuan-Chan Tu, Preparation of high hydroxyl equivalent weight polyols from vegetable oils, Industrial Crops and Products, Volume 27, Issue 3, May 2008, Pages 257-264, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2007.09.006.
(http://www.sciencedirect.com/science/article/B6T77-4R4DFX2-1/2/ef369e34ff6cd414a2bd0e2833e26a9d)
Abstract:
Multiple novel vegetable oil-based polyols were synthesized from the reaction-addition to epoxidized soybean oil (ESBO) by a series of acid acyl moieties derived from vegetable oils. The acid acyl moieties were linoleic acid (LA), ricinoleic acid (RC), ricinoleic acid estolide (RC estolide) and hydrolyzed bodied soybean oil (HBSBO). LA and RC were commercially available but RC estolide and HBSBO were synthesized by enzymatic catalytic reactions. In the reaction-addition, ESBO was heated with the acid acyl moieties at 170 [degree sign]C, atmospheric pressure without any catalyst and solvent. The synthesized vegetable oil-based polyols had acid numbers less than 10 (mg KOH/g), hydroxy numbers of 82-152 (mg KOH/g), and hydroxyl equivalent weights of 370-680. The polyols made from RC estolide and HBSBO had improved numbers of OH equivalent weight comparing to the numbers from alkoxyl hydroxyl soybean oil which is widely used commercial soy-based polyols.
Keywords: Enzyme; Epoxidized soybean oil; Hydroxyl equivalent weight; Polyol

Jaime Gonzalez, Ana Ferrer, Rosa Oria, Maria L. Salvador, Determination of O2 and CO2 transmission rates through microperforated films for modified atmosphere packaging of fresh fruits and vegetables, Journal of Food Engineering, Volume 86, Issue 2, May 2008, Pages 194-201, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.09.023.
(http://www.sciencedirect.com/science/article/B6T8J-4PRYFR4-3/2/cc30ae2d74e4bcf29bf01fad254b5ef0)
Abstract:
Microperforated films (perforation diameter <200 [mu]m) are an option for achieving the appropriate gaseous composition in modified atmosphere packaging, especially for fresh-cut products. In this project, static techniques were used to experimentally measure the oxygen and carbon dioxide transmission rates of microperforated films. Twenty nine microperforations of different dimensions (from 40 x 30 [mu]m to 350 x 110 [mu]m) and thickness (from 29 to 57 [mu]m)

were tested in the project. A potential equation was found to provide a good prediction of the dependence of the O2 and CO2 transmission rates on the perforation area. The data predicted by the equation was compared with those from five other bibliographic models. The empirical equation agrees, within the experimental range, with the modified Fick's law (considering the total diffusive pass length of a perforation as the sum of the perforation length and end correction term). The predictions of the proposed equation for thicker films and holes of larger dimensions (equivalent radius >3000 [mu]m) correspond to those of the empirical models.
Keywords: Microperforation; Permeability; Gas transfer; Modelling; MAP

D. Mark Hodges, Peter M.A. Toivonen, Quality of fresh-cut fruits and vegetables as affected by exposure to abiotic stress, Postharvest Biology and Technology, Volume 48, Issue 2, May 2008, Pages 155-162, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.10.016.
(http://www.sciencedirect.com/science/article/B6TBJ-4RB5GH3-1/2/74791ca0bc981bbb927620b41e3bbae3)
Abstract:
Abiotic stress potential has a significant impact on quality and nutritional status of fresh cut fruits and vegetables. However, very little work has been directed to defining and documenting the abiotic stresses that occur during fresh cut processing, packaging and storage. Many indicators can be used to infer impact of abiotic stress such as discolouration (e.g. browning of fresh-cut surfaces), increased respiration and ethylene evolution, loss of flavour and texture, weight loss, decline in levels of ascorbate, development of off-odours, membrane breakdown, and tissue softening. Using these indicators, a case is made from existing literature for the importance of abiotic stress in determining quality of fresh cut products. Impact of preharvest stress, genetic variation and stress response, injuries incurred after harvest, and storage regimes will be discussed in detail. From this literature review, it becomes clear that current understanding of abiotic stress levels and mechanisms is relatively sparse. Further research is required to better document this issue as well as to develop effective strategies to modulate stress responses such that quality and nutritive value of fresh cut fruits and vegetables can be improved.
Keywords: Abiotic stress; Fresh-cut; Horticulture; Preharvest; Postharvest; Storage

Jacques Kaloustian, Kamel Alhanout, Marie-Jo Amiot-Carlin, Denis Lairon, Henri Portugal, Alain Nicolay and Technical collaboration, Effect of water cooking on free phytosterol levels in beans and vegetables, Food Chemistry, Volume 107, Issue 4, 15 April 2008, Pages 1379-1386, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.09.061.
(http://www.sciencedirect.com/science/article/B6T6R-4PT0Y83-3/2/98791ec824f0fd1ffebe4a967054437a)
Abstract:
Plant sterols (phytosterols) are known to decrease plasma cholesterol, mainly the atherogenic LDL cholesterol. In an earlier study, the thermal stability of phytosterols in vegetable oils was reported. The aim of this present work was to investigate the potential effect of cooking (30 min in boiling water), for eight plant products (broad bean, celery, cabbage, courgette, carrot, cauliflower, onion, pepper), on the free phytosterol level. Sitosterol was the most abundant sterol, followed by campesterol. After cooking, the level of total sterols was higher in all vegetables than that before cooking, if dry matter is considered. Acid hydrolysis (active for glycosylated phytosterols) yielded a higher sterol value than alkaline hydrolysis alone (active for esterified phytosterols). This indicated that studied vegetables contained appreciable amounts of steryl glycosides. Their cooking induced higher values of free phytosterols. Cooked vegetables could give better protection against cardiovascular diseases thanks to higher phytosterol levels.
Keywords: Cardiovascular diseases; Cooking; Free phytosterol determination; GC; Plant products; Vegetables

Jaw-Ming Cherng, Wen Chiang, Ji-Hung Wang, Chi-Mo Lin, Chun-Yi Lee, Chuen-Ming Shih, Lien-Chai Chiang, Anthraquinones of edible wild vegetable Cassia tora stimulate proliferation of human CD4+ T lymphocytes and secretion of interferon-gamma or interleukin 10, Food Chemistry, Volume 107, Issue 4, 15 April 2008, Pages 1576-1580, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.10.005.
(http://www.sciencedirect.com/science/article/B6T6R-4PV94F7-3/2/efad799b276cdc418311ca236fe4c49e)
Abstract:
Cassia tora L. is an edible wild plant. This study evaluated the immunostimulatory activities of four anthraquinones of C. tora (aloe-emodin, emodin, chrysophanol, and rhein) on human peripheral blood mononuclear cells (PBMC). Studies were conducted on lymphocyte proliferation by BrdU immunoassay, secretion of interferon-gamma (IFN-[gamma]) and interleukin 10 (IL-10) by an ELISA assay and elucidation of responding immune cells by flow cytometry. The results showed that at non-cytotoxic concentrations, the tested anthraquinones were effective in stimulating the proliferation of resting human PBMC and/or secretion of IFN-[gamma]. However, at the concentration of 10 [mu]g/ml (35 [mu]M), rhein significantly stimulated proliferation of resting human PBMC (stimulation index (SI) = 1.53), but inhibited IFN-[gamma] secretion (74.5% of control). The augmentation of lymphocyte proliferation was correlated to the increase in number of CD4+ T cells, while the elevated secretion of IFN-[gamma] and IL-10 might have been due to the activated CD4+ T cells.
Keywords: Anthraquinones; Lymphoproliferation; Interferon-gamma (IFN-[gamma]); Interleukin 10 (IL-10); CD4+ T lymphocytes

Guonian Zhu, Maojun Jin, Wenjun Gui, Yirong Guo, Renyao Jin, Chunmei Wang, Chizhou Liang, Yihua Liu, Shuting Wang, Development of a direct competitive enzyme-linked immunoassay for carbofuran in vegetables, Food Chemistry, Volume 107, Issue 4, 15 April 2008, Pages 1737-1742, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.10.035.
(http://www.sciencedirect.com/science/article/B6T6R-4PXDM83-3/2/0805841c2c5c4edc7621781b3d7e8fd2)
Abstract:
Three ELISA formats, antigen coated, antibody coated and the second antibody coated for the determination of carbofuran were investigated with conjugations including hapten-BSA, hapten-OVA, hapten-HRP and anticarbofuran IgG-HRP. Results showed that the second antibody-coated method of ELISA had a better performance in the establishment of standard curves and detection of carbofuran residue in vegetables samples. The sensitivity for detection, the I50 value was 36.1 ng/ml at a practical working concentration range from 3.44 to 380.1 ng/ml and the limit of detection for carbofuran was 3.44 ng/ml. The average recoveries of determination for carbofuran spiked in cabbage, lettuce, carrot, winter fragrant-flowered garlic, bamboo shoot and green soy bean were 85.24%, 101.8%, 103.6%, 90.52%, 106.9% and 94.08%, respectively. Additional analyses confirmed that the results given by the ELISA method was in agreement with those of the gas chromatography (GC) method.
Keywords: Carbofuran; Residue; Vegetable; Enzyme-linked immunoassay (ELISA)

Rosa M. Gonzalez-Rodriguez, Raquel Rial-Otero, Beatriz Cancho-Grande, Jesus Simal-Gandara, Occurrence of fungicide and insecticide residues in trade samples of leafy vegetables, Food Chemistry, Volume 107, Issue 3, 1 April 2008, Pages 1342-1347, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.09.045.
(http://www.sciencedirect.com/science/article/B6T6R-4PRYG84-5/2/220853caf5e56e0d32644f99a2e42fad)
Abstract:

The aim of this work was to report on a total of 23 fungicides and insecticides residues in 75 green and leafy vegetables (Swiss chards, Spinaches and Lettuces) collected from Ourense (NW Spain) by Spring 2007. The pesticides in the study samples were extracted with acetonitrile; the extracts were then cleaned-up by solid-phase extraction and concentrated before determination by PTV (Programmable Temperature Vaporization Injector) - GC-ITMS. Use of analyte protectants mixtures provided the best results in terms of effective compensation for matrix-induced enhancement effect. Pesticide residues were determined above the maxima residue limits (MRL) in 15 of the 75 analyzed samples, with a total of 18 violations of the MRL (three of the samples did not fulfil with two different pesticide MRL). The highest concentrations of fungicides were found in lettuce (procymidone, 12 mg/kg) and the highest concentrations of insecticides were found in Swiss chard (cypermethrin, 6 mg/kg). More positives for fungicides were detected and at larger concentrations than insecticides, especially for lettuces. Accumulation of pesticides in lettuces is higher than for the other leafy vegetables. The findings of this study pointed to the following recommendation: the need for a monitoring program for residues of iprodione and procymidone, together with cypermethrin, in food crops at the national level.
Keywords: Fungicides; Insecticides leafy vegetables

M.E. Carrin, G.H. Crapiste, Mathematical modeling of vegetable oil-solvent extraction in a multistage horizontal extractor, Journal of Food Engineering, Volume 85, Issue 3, April 2008, Pages 418-425, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.08.003.
(http://www.sciencedirect.com/science/article/B6T8J-4PCXG89-5/2/3c310a776b7acb1cd6c9b97e87b0e3dd)
Abstract:
A new mathematical model of vegetable oil extraction in an industrial De Smet type extractor is proposed. Solvent extraction from a mobile bed of oilseed material was modeled considering different availability of oil in pellets, countercurrent cross-flow of the porous solid and the miscella, diffusion in the entire extraction field, mass transfer between pellets and miscella, miscella transport between the percolation sections, loading and drainage zones, and transient operational regime of the extractor. The mathematical model was solved numerically to predict oil concentration in miscella and pellets through the percolation sections and at the outlets. Model predictions were compared with experimental industrial data for sunflower oil extraction with hexane. Differentiation in two oil categories in terms of availability and extraction kinetics allows to represent the extraction phenomena in a better way than considering a single process. Consideration of dispersion fluxes improves the results without increasing the computing time. Saturation is reached in the stages near to loading zone when low miscella velocity is used.
Keywords: Mathematical model; Mobile bed; Oilseeds; Percolation; Solvent extraction

Eileen Vincent, Fruit, Vegetable, and Dairy Intake Predicts Nutritional Adequacy, Journal of the American Dietetic Association, Volume 108, Issue 4, April 2008, Pages 659-660, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.02.031.
(http://www.sciencedirect.com/science/article/B758G-4S5496J-M/2/6fc39859545664c1ae0695c1da4d09a7)

Christina D. Economos, Jennifer M. Sacheck, Kenneth Kwan Ho Chui, Laura Irizzary, Juliette Guillemont, Jessica J. Collins, Raymond R. Hyatt, School-Based Behavioral Assessment Tools Are Reliable and Valid for Measurement of Fruit and Vegetable Intake, Physical Activity, and Television Viewing in Young Children, Journal of the American Dietetic Association, Volume 108, Issue 4, April 2008, Pages 695-701, ISSN 0002-8223, DOI: 10.1016/j.jada.2008.01.001.
(http://www.sciencedirect.com/science/article/B758G-4S5496J-T/2/17f59dbb999331b7f5f00dba2ebc6d46)
Abstract:

Interventions aiming to modify the dietary and physical activity behaviors of young children require precise and accurate measurement tools. As part of a larger community-based project, three school-based questionnaires were developed to assess (a) fruit and vegetable intake, (b) physical activity and television (TV) viewing, and (c) perceived parental support for diet and physical activity. Test-retest reliability was performed on all questionnaires and validity was measured for fruit and vegetable intake, physical activity, and TV viewing. Eighty-four school children (8.3+/-1.1 years) were studied. Test-retest reliability was performed by administering questionnaires twice, 1 to 2 hours apart. Validity of the fruit and vegetable questionnaire was measured by direct observation, while the physical activity and TV questionnaire was validated by a parent phone interview. All three questionnaires yielded excellent test-retest reliability (P<0.001). The majority of fruit and vegetable questions and the questions regarding specific physical activities and TV viewing were valid. Low validity scores were found for questions on watching TV during breakfast or dinner. These questionnaires are reliable and valid tools to assess fruit and vegetable intake, physical activity, and TV viewing behaviors in early elementary school-aged children. Methods for assessment of children's TV viewing during meals should be further investigated because of parent-child discrepancies.

A.G. Ponce, M.R. Moreira, C.E. del Valle, S.I. Roura, Preliminary characterization of bacteriocin-like substances from lactic acid bacteria isolated from organic leafy vegetables, LWT - Food Science and Technology, Volume 41, Issue 3, April 2008, Pages 432-441, ISSN 0023-6438, DOI: 10.1016/j.lwt.2007.03.021.
(http://www.sciencedirect.com/science/article/B6WMV-4NDDM7M-1/2/bc106c16101b1cc4fc1e5cdec99d4d79)
Abstract:
This study presents the characterization of new strains of lactic acid bacteria (LAB) from organic vegetables. Forty-five strains of LAB isolated from vegetables were investigated by its antimicrobial activity against taxonomically related microorganisms. Genetic identification of selected LAB was performed by means of PCR method. These strains were Enterococcus faecium, Lactococcus lactis, Enterococcus hirae and Enterococcus canis. Bacteriocin-like substances were active against Gram-positive bacteria and Gram-negative foodborne pathogens (Listeria monocytogenes and Escherichia coli, respectively). The antimicrobial activity of LAB strains was inactivated by the addition of proteases, thus confirming the proteinaceous nature of the inhibition. In all four strains the bacteriocin activity was stable after extended refrigerated storage and freezing-thawing cycles. This fact suggests that bacteriocin produced by the four LAB strains may find application as biopreservatives in minimally processed vegetables.
Keywords: Lactic acid bacteria; Organic vegetables; Bacteriocin- like substances; Natural antimicrobials

Peter M.A. Toivonen, David A. Brummell, Biochemical bases of appearance and texture changes in fresh-cut fruit and vegetables, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 1-14, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4PYJP7W-3/2/e1dedab5c3977910a807921390235b5e)
Abstract:
This review describes the biochemical bases for color and firmness changes in fruit and vegetable tissues, since appearance and texture are two of the most fundamental factors affecting the quality of fresh-cut products. The intent is to provide a level of understanding that can be used to underpin future research directions in order to resolve existing issues that limit fresh-cut quality and shelf life. The biochemical mechanisms for enzymatic browning mediated by polyphenol oxidase and phenol peroxidase are described, and the importance of limiting cellular damage during the processing of fresh-cut fruit and vegetable products is emphasized. Also described are two

mechanisms of chlorophyll degradation involved in discoloration events in green tissues, and examples of coloring processes specific to particular crops (white blush in carrots, discoloration of Allium spp., secondary browning in apples). The loss of desirable texture in fresh-cut products is a major problem. In fruit this is largely due to a continuation of cell wall disassembly events that are a normal component of ripening, and which result in declining cell wall strength and reduced intercellular adhesion. In some species the process is exacerbated by wound-response ethylene. However, wounding, water loss and ripening-related turgor changes are also important contributors to textural deterioration. In fresh-cut vegetables, water loss and damage-induced lignification are common problems. The effects of factors such as maturity at harvest, processing conditions and various treatments to mitigate quality decline are discussed.
Keywords: Color; Texture; Pigments; Cell walls; Biochemical changes; Fruit; Vegetables

Marvin J. Pitts, Denny C. Davis, Ralph P. Cavalieri, Three-point bending: An alternative method to measure tensile properties in fruit and vegetables, Postharvest Biology and Technology, Volume 48, Issue 1, April 2008, Pages 63-69, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.09.025.
(http://www.sciencedirect.com/science/article/B6TBJ-4RTKXF1-4/2/40bcd0dc4450022c1fc6728a8ea62de1)
Abstract:
Tensile mechanical properties of fruit and vegetable tissue are likely to have a significant effect on fruit and vegetable quality evaluations. Very few studies have been made of tensile material properties because sample preparation for uniaxial tensile testing of fruit and vegetable tissue is difficult. Three-point bending is an alternative experimental method to measure tensile elastic modulus. In this study a derivation of bending theory was developed and used in conjunction with a three-point bending procedure using digital image-based analysis to locate the neutral axis of the material. Mechanics of materials theory and concepts were used to determine a relationship between the location of the neutral axis and the ratio of compressive elastic modulus to tensile elastic modulus. The procedure to locate the neutral axis and the derivation to determine the tensile elastic modulus were verified using a homogeneous cork-based material which exhibited distinctly different compressive and tensile properties. Tensile elastic modulus measured using the bending apparatus agreed closely (within 1%) to tensile elastic modulus measured using a uniaxial tension apparatus. This experimental method is well suited to measure tensile properties in many fruit and vegetables.
Keywords: Fruit; Tissue; Tensile; Material properties; Elastic modulus

Hikmate Abriouel, Nabil Ben Omar, Antonio Cobo Molinos, Rosario Lucas Lopez, M Jose Grande, Pilar Martinez-Viedma, Elena Ortega, Magdalena Martinez Canamero, Antonio Galvez, Comparative analysis of genetic diversity and incidence of virulence factors and antibiotic resistance among enterococcal populations from raw fruit and vegetable foods, water and soil, and clinical samples, International Journal of Food Microbiology, Volume 123, Issues 1-2, 31 March 2008, Pages 38-49, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.11.067.
(http://www.sciencedirect.com/science/article/B6T7K-4R8NB5F-6/2/2fcdaef16f82827eef5e44a94ac1ca97)
Abstract:
A comparative study was carried out among enterococci isolated from fruits and vegetable foods, water and soil, and clinical samples. Results indicate strong differences in the numbers of enfterococcal species found in different environments as well as their abundance. While Enterococcus faecalis was clearly the predominant species in clinical samples, Enterococcus faecium predominated in vegetables, and it slightly outnumbered E. faecalis in water samples. Other species (Enterococcus hirae, Enterococcus mundtii, Enterococcus durans, Enterococcus gallinarum and Enterococcus casseliflavus) were found more frequently in vegetables, water, and specially in soil. Isolates from vegetable foods showed a lower incidence of antibiotic resistance

compared to clinical isolates for most antimicrobials tested, especially erythromycin, tetracycline, chloramphenicol, ciprofloxacin, levofloxacin, gentamicin and streptomycin for E. faecalis, and quinupristin/dalfopristin, ampicillin, penicillin, ciprofloxacin, levofloxacin, rifampicin, choramphenicol, gentamicin and nitrofurantoin for E. faecium. E. faecium isolates from vegetable foods and water showed an average lower number of antibiotic resistance traits (2.95 and 3.09 traits for vegetable and water isolates, respectively) compared to clinical samples (7.5 traits). Multi-resistant strains were also frequent among clinical E. faecalis isolates (5.46 traits on average). None of E. faecalis or E. faecium isolates from vegetable foods, water and soil showed beta-haemolytic activity, while 25.64% of clinical E. faecalis did. A 51.28% of E. faecalis clinical isolates tested positive for the cylA, cylB, cylM set of genes, while some or all of these genes were missing in the rest of isolates. In clinical E. faecalis and E. faecium isolates, the genetic determinants for the enterococcal surface protein gene (esp), the collagen adhesin gene (ace) and the sex pheromone gene ccf (as well as cob in E. faecalis) showed a clearly higher incidence compared to isolates from other sources. E. faecalis isolates from vegetable foods and water had much lower average numbers of virulence genetic determinants per strain (4.23 and 4.0, respectively) compared to clinical isolates (8.71). Similarly, among E. faecium the lowest average number of traits per strain occurred in vegetable food isolates (1.72) followed by water (3.9) and clinical isolates (4.73). Length heterogeneity (LH)-PCR typing with espF-aceF-ccfF and espF-ccfF primers revealed genomic groups that clearly differentiated clinical isolates from those of vegetable foods, water and soil (except for two clinical isolates). The large differences found in the incidence of antibiotic resistance and virulence factors and in the genetic fingerprints determined by LH-PCR suggest a clear separation of hospital-adapted populations of enterococci from those found in open environments.
Keywords: Enterococci; Virulence; Antibiotic resistance; Vegetable foods; Water; Soil; Food safety

M. Abadias, J. Usall, M. Anguera, C. Solsona, I. Vinas, Microbiological quality of fresh, minimally-processed fruit and vegetables, and sprouts from retail establishments, International Journal of Food Microbiology, Volume 123, Issues 1-2, 31 March 2008, Pages 121-129, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.12.013.
(http://www.sciencedirect.com/science/article/B6T7K-4RPVHWW-2/2/8986e87b040e1842b3b3f28baef40756)
Abstract:
A survey of fresh and minimally-processed fruit and vegetables, and sprouts was conducted in several retail establishments in the Lleida area (Catalonia, Spain) during 2005-2006 to determine whether microbial contamination, and in particular potentially pathogenic bacteria, was present under these commodities. A total of 300 samples--including 21 ready-to-eat fruits, 28 whole fresh vegetables, 15 sprout samples and 237 ready-to-eat salads containing from one to six vegetables--were purchased from 4 supermarkets. They were tested for mesophilic and psychrotrophic aerobic counts, yeasts and moulds, lactic acid bacteria, Enterobacteriaceae, presumptive E. coli and Listeria monocytogenes counts as well as for the presence of Salmonella, E. coli O157:H7, Yersinia enterocolitica and thermotolerant Campylobacter.
Results for the fresh-cut vegetables that we analyzed showed that, in general, the highest microorganism counts were associated with grated carrot, arugula and spinach (7.8, 7.5 and 7.4 log cfu g- 1 of aerobic mesophilic microorganisms; 6.1, 5.8 and 5.2 log cfu g- 1 of yeast and moulds; 5.9, 4.0 and 5.1 log cfu g- 1 lactic acid bacteria and 6.2, 5.3 and 6.0 log cfu g- 1 of Enterobacteriaceae). The lowest counts were generally associated with fresh-cut endive and lettuce (6.2 and 6.3 log cfu g- 1 of aerobic mesophilic microorganisms; 4.4 and 4.6 log cfu g- 1 of yeast and moulds; 2.7 and 3.8 log cfu g- 1 lactic acid bacteria and 4.8 and 4.4 log cfu g- 1 of Enterobacteriaceae). Counts of psychrotrophic microorganisms were as high as those of mesophilic microorganisms. Microbiological counts for fresh-cut fruit were very low. Sprouts were highly contaminated with mesophilic (7.9 log cfu g- 1), psychrotrophic microorganisms (7.3 log cfu

g- 1) and Enterobacteriaceae (7.2 log cfu g- 1) and showed a high incidence of E. coli (40% of samples). Of the samples analyzed, four (1.3%) were Salmonella positive and two (0.7%) harboured L. monocytogenes. None of the samples was positive for E. coli O157:H7, pathogenic Y. enterocolitica or thermotolerant Campylobacter.
Keywords: Incidence; Foodborne pathogens; Fresh-cut; Ready-to-eat; Salmonella; E. coli; L. monocytogenes; Campylobacter; Y. enterocolitica

Maribel Abadias, Josep Usall, Marcia Oliveira, Isabel Alegre, Inmaculada Vinas, Efficacy of neutral electrolyzed water (NEW) for reducing microbial contamination on minimally-processed vegetables, International Journal of Food Microbiology, Volume 123, Issues 1-2, 31 March 2008, Pages 151-158, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.12.008.
(http://www.sciencedirect.com/science/article/B6T7K-4RPVHWW-3/2/e37fc57a9b805af3912ec06c9fd96e55)
Abstract:
Consumption of minimally-processed, or fresh-cut, fruit and vegetables has rapidly increased in recent years, but there have also been several reported outbreaks associated with the consumption of these products. Sodium hypochlorite is currently the most widespread disinfectant used by fresh-cut industries. Neutral electrolyzed water (NEW) is a novel disinfection system that could represent an alternative to sodium hypochlorite. The aim of the study was to determine whether NEW could replace sodium hypochlorite in the fresh-cut produce industry. The effects of NEW, applied in different concentrations, at different treatment temperatures and for different times, in the reduction of the foodborne pathogens Salmonella, Listeria monocytogenes and Escherichia coli O157:H7 and against the spoilage bacterium Erwinia carotovora were tested in lettuce. Lettuce was artificially inoculated by dipping it in a suspension of the studied pathogens at 108, 107 or 105 cfu ml-1, depending on the assay. The NEW treatment was always compared with washing with deionized water and with a standard hypochlorite treatment. The effect of inoculum size was also studied. Finally, the effect of NEW on the indigenous microbiota of different packaged fresh-cut products was also determined. The bactericidal activity of diluted NEW (containing approximately 50 ppm of free chlorine, pH 8.60) against E. coli O157:H7, Salmonella, L. innocua and E. carotovora on lettuce was similar to that of chlorinated water (120 ppm of free chlorine) with reductions of 1-2 log units. There were generally no significant differences when treating lettuce with NEW for 1 and 3 min. Neither inoculation dose (107 or 105 cfu ml-1) influenced the bacterial reduction achieved. Treating fresh-cut lettuce, carrot, endive, corn salad and `Four seasons' salad with NEW 1:5 (containing about 50 ppm of free chlorine) was equally effective as applying chlorinated water at 120 ppm. Microbial reduction depended on the vegetable tested: NEW and sodium hypochlorite treatments were more effective on carrot and endive than on iceberg lettuce, `Four seasons' salad and corn salad. The reductions of indigenous microbiota were smaller than those obtained with the artificially inoculated bacteria tested (0.5-1.2 log reduction). NEW seems to be a promising disinfection method as it would allow to reduce the amount of free chlorine used for the disinfection of fresh-cut produce by the food industry, as the same microbial reduction as sodium hypochlorite is obtained. This would constitute a safer, `in situ', and easier to handle way of ensuring food safety.
Keywords: Disinfection; Fresh-cut vegetables; Escherichia coli; Listeria; Salmonella; Erwinia carotovora

Tom Baranowski, Mariam Missaghian, Kathy Watson, Alison Broadfoot, Karen Cullen, Theresa Nicklas, Jennifer Fisher, Sharon O'Donnell, Home fruit, juice, and vegetable pantry management and availability scales: A validation, Appetite, Volume 50, Issues 2-3, March-May 2008, Pages 266-277, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.07.013.
(http://www.sciencedirect.com/science/article/B6WB2-4PJM9DH-1/2/68bca439e1a0b9d2ad27c424dbc74e17)

Abstract:
Home fruit, 100% juice, and vegetables (FJV) availability is related to increased FJV consumption by children. While FJV must be purchased for use in the home, no scales have been reported on home FJV pantry management practices. A scale for home FJV pantry management practices was generated from focus group discussions with diverse 162 food shoppers. A commonly used scale of home FJV availability was also assessed. A grocery store intercept survey recruited 171 food shoppers with children in front of supermarkets and grocery stores. Survey instruments were administered twice, separated by 6 weeks. Single dimensionality was observed for each scale. Item Response Theory parameter estimates revealed easily interpreted patterns in the sequence of items by difficulty of response. These scales are available to help better understand influences on family FJV purchase decisions.
Keywords: Pantry; Home availability; Fruit; Vegetables; Purchase; Validation; Reliability; Item response modeling

M. Barker, W. Lawrence, J. Woadden, S.R. Crozier, T.C. Skinner, Women of lower educational attainment have lower food involvement and eat less fruit and vegetables, Appetite, Volume 50, Issues 2-3, March-May 2008, Pages 464-468, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.10.004.
(http://www.sciencedirect.com/science/article/B6WB2-4PXM64C-3/2/aca31b1e0201f181ca4da73140c0920c)
Abstract:
Women who leave school with few or no educational qualifications are less likely to have diets that meet current recommendations than women who attain more qualifications at school. We hypothesise that lower `food involvement', meaning that food has a lower level of importance in their lives, explains the poorer quality diets of women of lower educational attainment. We administered Bell and Marshall [(2003). The construct of food involvement in behavioral research: Scale development and validation. Appetite, 40, 235-244.] Food Involvement scale to 242 women of varied educational attainment, of whom 127 were also asked how often they ate fruit and vegetables. Women's food involvement decreased with decreasing educational attainment. Forty-two percent of women who had no educational qualifications were in the lowest quarter of the food involvement score, compared with 12% of women with degrees. Women with lower scores on the food involvement scale also reported eating fruit and vegetables less often. The odds of eating fewer fruit and vegetables rose with lower educational attainment and with lower food involvement scores, suggesting that each has an independent effect. We have shown that the Food Involvement scale discriminates between women, is associated with other characteristics and predicts dietary quality. We now plan to use it in a larger, representative population of women of lower educational attainment to examine its role along with other psychological variables in determining dietary quality.
Keywords: Women; Education; Food involvement; Fruit and vegetables; Dietary quality

Elzbieta Sikora, Ewa Cieslik, Teresa Leszczynska, Agnieszka Filipiak-Florkiewicz, Pawel M. Pisulewski, The antioxidant activity of selected cruciferous vegetables subjected to aquathermal processing, Food Chemistry, Volume 107, Issue 1, 1 March 2008, Pages 55-59, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.07.023.
(http://www.sciencedirect.com/science/article/B6T6R-4P7789D-3/2/9a11c9eafe7d415f5ec4f477f5e6648b)
Abstract:
Kale (Brassica oleracea var. Acephala), broccoli (Brassica oleracea var. botrytis italica), Brussels sprouts (Brassica oleracea L. var. gemmifera) and green and white cauliflower (Brassica oleracea var. botrytis) were used to determine their contents of antioxidising agents: vitamin C, carotenoids and polyphenols. The examined vegetables were found to contain between 40.6 and 107 mg/100

g FW of vitamin C, from 0.04 to 2.7 mg/100 g FW of carotenoids, and from 144 to 773 mg/100 g FW of polyphenols. Cauliflower was found to contain the smallest amount of these compounds and kale the largest. The antioxidant activity of the vegetables was determined on the basis of their ability to extinguish the ABTS free radical. The aquathermal processes to which the vegetables were subsequently subjected reduced their antioxidant activity, mainly due to escape of vitamin C and polyphenols into the water environment. These losses were largest in the case of leafy or highly fragmented vegetables.
Keywords: Brassica vegetables; Vitamin C; Carotenoids; Polyphenols; Antioxidant activity

Heidi Schwartz, Velimatti Ollilainen, Vieno Piironen, Anna-Maija Lampi, Tocopherol, tocotrienol and plant sterol contents of vegetable oils and industrial fats, Journal of Food Composition and Analysis, Volume 21, Issue 2, March 2008, Pages 152-161, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.07.012.
(http://www.sciencedirect.com/science/article/B6WJH-4PDC17Y-1/2/1fb455928b7f19b4c752eef5c9db4430)
Abstract:
The tocopherol and tocotrienol (i.e. tocol) and plant sterol contents of 14 vegetable and 9 industrial fats and oils available on the Finnish market in 2005 were determined using NP-HPLC with fluorescence detection (tocols) and GC-FID (plant sterols). Best sources of [alpha]-tocopherol were wheat germ (192 mg/100 g) and sunflower oil (59 mg/100 g). Oils richest in [gamma]-tocopherol were camelina (72 mg/100 g), linseed (52 mg/100 g) and organic rapeseed oil (51 mg/100 g). Total tocol contents were between 4.2 mg/100 g (coconut fat) and 268 mg/100 g (wheat germ oil). Plant sterol contents ranged from 69 mg/100 g in a frying fat to 4240 mg/100 g in wheat germ oil. Organic rapeseed oil, the second best source of plant sterols, contained 887 mg/100 g. The variations of the total tocol and sterol contents in 10 rapeseed oil sub-samples analysed separately were 9.7% for tocols and 9.9% for sterols in refined rapeseed oil, and 6.3% for tocols and 4.2% for sterols, respectively, in cold-pressed rapeseed oil. In addition to the target compounds, plastochromanol-8 could be determined in all plant-based samples with contents ranging from 0.13 (walnut oil) to 18 mg/100 g (linseed oil). The lignans sesamin and sesamolin could be identified in sesame oil.
Keywords: Tocopherols; Tocotrienols; Plant sterols; Vegetable oils; Industrial fats; Chromatographic analysis; Finnish food composition database

Weenanan Somsub, Ratchanee Kongkachuichai, Pongtorn Sungpuag, Rin Charoensiri, Effects of three conventional cooking methods on vitamin C, tannin, myo-inositol phosphates contents in selected Thai vegetables, Journal of Food Composition and Analysis, Volume 21, Issue 2, March 2008, Pages 187-197, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.08.002.
(http://www.sciencedirect.com/science/article/B6WJH-4PGGP20-1/2/8516ba7f00ecc7ef2a8250eb1835ab9a)
Abstract:
Vegetables commonly consumed in Thailand were analyzed for their vitamin C, tannin and total phytate (inositol penta- (IP5) and hexasphosphate (IP6)) contents. Three conventional household cooking methods, namely blanching, boiling and stir-frying, were used to evaluate the effects of cooking. IP5 and IP6 content were determined using ion-pair reverse-phase chromatography. Vitamin C and tannin content were analyzed spectrophotometrically. Vitamin C content for raw and cooked vegetables ranged from 0.5-83.6 to 0.2-70.8 mg/100 g, respectively. Stir-fried pagwanpa (Melientha suavis Pierre.), pagwanban (Sauropus andogynus (L) Merr.) and cowslip creeper flower (Telosma minor Craib) were excellent sources of vitamin C (64.4-70.8 mg/100 g). High tannin content was found in lead tree ('Yod-kratin', Acacia farnesiana Willd.; 1353 and 679 mg/100 g tannic acid equivalent for raw and blanched sample, respectively), while neem tree (Azdirachta indica A. Juss) contained high phytate (52 and 38 mg/100 g for raw and blanched sample,

respectively). Blanching, stir-frying and boiling caused a decrease in the total vitamin C, with losses from 14% to 95%, the greatest loss being found in boiled bitter cucumber (Monordica charantia Linn.) (95%), whereas retention of total phytate and tannin was around 58-79% for phytate and 44-93% for tannin. Although conventional boiling method was an effective method to reduce tannin and phytate content in vegetables, it also reduced the content of vitamin C.
Keywords: Vitamin C; Tannin; Phytate; Inositol phosphate; Thai vegetables; Cooking; IP5; IP6; Nutrient retention; Boiling; Blanching; Stir-frying

Ana Osvald, Lidija Zadnik Stirn, A vehicle routing algorithm for the distribution of fresh vegetables and similar perishable food, Journal of Food Engineering, Volume 85, Issue 2, March 2008, Pages 285-295, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.07.008.
(http://www.sciencedirect.com/science/article/B6T8J-4PB6VP2-G/2/ec585bea3e084cc7366212cb7a456b81)
Abstract:
An algorithm for the distribution of fresh vegetables in which the perishability represents a critical factor was developed. This particular problem was formulated as a vehicle routing problem with time windows and time-dependent travel-times (VRPTWTD) where the travel-times between two locations depends on both the distance and on the time of the day. The model considers the impact of the perishability as part of the overall distribution costs and a heuristic approach, based on the tabu search is used to solve the problem. The performance of the algorithm was verified using modified Solomon's problems. Using parameters typical of the Slovenian food market, different schedules were achieved, giving improvements of up to 47% reduction in perished goods.
Keywords: Vehicle routing problem; Distribution; Perishable food; Time-dependent; Loss of quality

Jennifer Karas Montez, Karl Eschbach, Country of Birth and Language Are Uniquely Associated with Intakes of Fat, Fiber, and Fruits and Vegetables among Mexican-American Women in the United States, Journal of the American Dietetic Association, Volume 108, Issue 3, March 2008, Pages 473-480, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.12.008.
(http://www.sciencedirect.com/science/article/B758G-4RY6RKN-N/2/bc2f81cb7acea7161cfaa739ac3bf7ac)
Abstract: Objective
Previous research on the relationship between diet and acculturation among Hispanics has produced inconsistent results. This study examined the association between diet, country of birth, and a language acculturation scale among Mexican-American women.Design
The study used a cross-sectional design with data from the 2000 National Health Interview Survey and its Cancer Control Module. The module was administered to one adult per household and included 17 dietary intake questions.Subjects/setting
Subjects were 1,245 nonpregnant women of Mexican descent between 25 and 64 years of age residing in the United States who were interviewed in their homes.Statistical analysis performed
Least-squares regression with sampling weights and adjustment of standard errors for survey design effects was used to estimate the associations between country of birth, language acculturation, and percent energy from fat, intake of fiber, and intake of fruits and vegetables, with statistical control for age, education, and marital status.Results
In multivariate models, US-born women consumed fewer grams of fiber per day ([beta]=-2.44; P<0.01) and a larger percentage of energy from fat ([beta]=2.06; P<0.01) than Mexican-born women. Greater English language use was associated with decreased consumption of fiber (P<0.01), and a decline in fruit and vegetable intake with a greater decline for US-born (P<0.10).Conclusions
Acculturation is associated with several unfavorable dietary changes. Women who were born in the United States are at greater risk of declining dietary quality compared to Mexican-born women, and US-born English-speaking women have more unfavorable dietary profiles. Research and

public health education concerning dietary intake should consider both country of birth and language.

D. Montero, V. Grasso, M.S. Izquierdo, R. Ganga, F. Real, L. Tort, M.J. Caballero, F. Acosta, Total substitution of fish oil by vegetable oils in gilthead sea bream (Sparus aurata) diets: Effects on hepatic Mx expression and some immune parameters, Fish & Shellfish Immunology, Volume 24, Issue 2, February 2008, Pages 147-155, ISSN 1050-4648, DOI: 10.1016/j.fsi.2007.08.002.
(http://www.sciencedirect.com/science/article/B6WFN-4PTW4PR-5/2/04a1f3b193d5c6f769c81b93a56ec7d0)
Abstract:
The use of vegetable oils in fish nutrition has been extensively studied; and recent work has focused attention on replacing fish oil with alternative fatty acid sources and their effect on the immune system. However, little is known about the effect of these oils on immune parameters such as the fish interferon system.
In this study we evaluate the effect of two vegetable oils (linseed and soybean) on gilthead sea bream Mx expression and other innate immune parameters. Experimental diets were formulated where fish oil was totally replaced by vegetable oils or for a mixture of them (50% linseed and 50% soybean). Another diet prepared with pure fish oil was used as a control.
Two experiments were carried out in order to evaluate growth, feed utilization, serum alternative complement pathway activity, serum lysozyme and phagocytic activity of head kidney leucocytes as well as Mx expression in the liver.
In the first experiment fish were fed with experimental diets for 6 months and then, growth and feed utilization as well as immune parameters were analyzed. In the second experiment, fish from the previous feeding trial were injected with either a sub-lethal dose of Photobacterium damselae subsp. piscicida (94/99) or a synthetic dsRNA (Poly I:C) in order to stimulate an Mx response.
The results show that total substitution of fish oil by vegetable oils decreased the growth of gilthead sea bream juveniles. Furthermore, both phagocytic activity and serum alternative complement pathway activity were significantly reduced by the inclusion of either vegetable oil individually in the sea bream diets, but the diet with mixed vegetable oils had no significant effect. There was no effect on serum lysozyme levels but the basal constitutive levels of Mx transcript expression in the liver were elevated in the fish fed the vegetable oil diets.
The time-course of the Mx response to injection of Poly I:C was shorter in the fish fed the fish oil diet and the fish fed the diet based on a mixture of both vegetable oils showed a faster Mx response to bacterial injection. Following stimulation with Poly I:C or PDP the fish fed the vegetable oil based diets still maintained higher basal levels of hepatic Mx expression than the fish fed the fish oil diet which returned to undetectable levels.
Keywords: Sparus aurata; Gilthead sea bream; Vegetable oil; Fish health; Protein Mx gene expression

Jaw-Ming Cherng, Wen Chiang, Lien-Chai Chiang, Immunomodulatory activities of common vegetables and spices of Umbelliferae and its related coumarins and flavonoids, Food Chemistry, Volume 106, Issue 3, 1 February 2008, Pages 944-950, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.07.005.
(http://www.sciencedirect.com/science/article/B6T6R-4P5NX89-2/2/3eceb97b3c9d8a6bb118e03fbe1117d8)
Abstract:
Carrots, celery, coriander, fennel and parsley of the Umbelliferae family have been used as common vegetables and spices in many different cultures of the world. In this study, we evaluated the immunomodulatory activities of coumarins and flavonoids obtained from the above foods on human peripheral blood mononuclear cells (PBMC). Studies were conducted on lymphocyte transformation, ELISA assay and flow cytometry. Results provided the evidence of a health-

modulating effect of these vegetables and spices which possessed a direct role in immunomodulatory function. Some of non-nutritional constituents of these foods such as coumarins and flavonoids also exhibited a similar immunomodulatory activity. At non-cytotoxic concentrations, the above phytoconstituents exhibited three types of immunomodulation including type 1 of PHA, ConA and quercetin (increased lymphocyte activation and IFN-[gamma] secretion); type 2 of isopimpinellin (enhanced lymphocyte activation) and type 3 of rutin, bergapten and xanthotoxin (elevated IFN-[gamma] secretion). The augmentation of lymphocyte proliferation was closely correlated to an increase in the number of lymphocyte cells including CD8+ T cells and activated PBMC, whereas elevation of IFN-[gamma] secretion was due to the activated CD8+ T cells.
Keywords: Foods of Umbelliferae; Immunomodulation; Coumarins; Flavonoids

Jin-Yuarn Lin, Ching-Yin Tang, Total phenolic contents in selected fruit and vegetable juices exhibit a positive correlation with interferon-[gamma], interleukin-5, and interleukin-2 secretions using primary mouse splenocytes, Journal of Food Composition and Analysis, Volume 21, Issue 1, February 2008, Pages 45-53, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.06.002.
(http://www.sciencedirect.com/science/article/B6WJH-4P29K9W-1/2/5b29cb77ce3e3f571f20b66778026f1a)
Abstract:
We hypothesized that some fruits and vegetables have an immuno-modulatory potential on T helper type 1 (Th1) and Th2 cytokine secretions. Therefore, Th1 cytokines including interleukin (IL)-2, and interferon (IFN)-[gamma], and Th2 cytokines including IL-4 and IL-5, produced by mouse splenocytes administrated with 13 selected fruits and vegetables were determined. The results showed that low dose (10 [mu]g/ml) administration with oriental plum, mulberry, peppers (including green, yellow, and red color varieties), ceylon spinach, and red onion significantly ($P<0.05$) increased IL-2 secretion. Administration with high dose (500 [mu]g/ml) strawberry significantly increased the secretion ratio of IFN-[gamma]/IL-5 (Th1/Th2). Further analysis showed that the stimulatory effects of selected fruits and vegetables on IL-2, IFN-[gamma], and IL-5 secretions demonstrated a significantly ($P<0.05$) positive correlation with the total phenolic (including flavonoid) content in the selected fruits and vegetables. The correlation coefficient (r) between total phenolic content (including flavonoid) and cytokine secretions varied in magnitude: IFN-[gamma]>IL-5>IL-2. The coefficients from total phenolic content were much greater than those from the total flavonoid content. The total phenolic and flavonoid contents of oriental plum, mulberry, green pepper, and red onion II showed a significantly positive correlation with the IFN-[gamma] secretion. This study suggests that in vitro supplementation with phenolic-rich fruits and vegetables might demonstrate an immuno-modulatory potential via the regulation of Th1/Th2 cytokine secretions, especially Th1 cytokines. The Th1/Th2 immuno-modulatory potentials of these selected fruits and vegetables will be important and useful for the future exploitation of food materials to develop a novel functional food.
Keywords: Strawberry; Fragaria ananassa; Mulberry; Morus alba; Ceylon spinach; Basella rubra L.; Interferon-[gamma]; Interleukin-2; Primary mouse splenocytes

Luca Settanni, Aldo Corsetti, Application of bacteriocins in vegetable food biopreservation, International Journal of Food Microbiology, Volume 121, Issue 2, 31 January 2008, Pages 123-138, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.09.001.
(http://www.sciencedirect.com/science/article/B6T7K-4PMJJX7-3/2/5bec5f5342a42fb65a2d96fdf2a1749d)
Abstract:
Bacteriocins are generally recognized as 'natural' compounds able to influence the safety and quality of foods. In the past years, a lot of works have been aimed to the detection, purification and characterisation of bacteriocins, as well as to their use in food preservation strategies. A list of

review articles dealing with the application of bacteriocins to the protection of foods of animal origin is also available in literature, but it lacks for a summary on the utilization of bacteriocins in vegetable foods. These biopreservatives can be used in a number of ways in food systems and this paper mainly focuses on the state-of-the-art application of bacteriocins from lactic acid bacteria (LAB) to promote the microbial stability of both fermented and non-fermented vegetable food products using bacteriocinogenic strains as starter cultures, protective cultures or co-cultures and the employment of pure bacteriocins as food additives. In addition, applications of bacteriocins from non-LAB are also reviewed. The scopes of future directions of research are summarised.
Keywords: Bacteriocins; Biopreservation; Food additives; Vegetable foods

Zofia Lisiewska, Jacek Slupski, Waldemar Kmiecik, Piotr Gebczynski, Availability of essential and trace elements in frozen leguminous vegetables prepared for consumption according to the method of pre-freezing processing, Food Chemistry, Volume 106, Issue 2, 15 January 2008, Pages 576-582, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.06.025.
(http://www.sciencedirect.com/science/article/B6T6R-4P2YWX5-5/2/c531fa89d1465e3b830b7ea4171a6dd2)
Abstract:
The content of ash and P, K, Ca, Mg, Na, Fe, Zn, Mn, Cu, Cr and Ni was determined in broad bean and pea seeds of milk-wax maturity and in French-bean pods. The investigation covered the raw material; blanched and cooked material and frozen products prepared from blanched or cooked vegetables after 12 months of storage at -30 [degree sign]C. Frozen products were prepared for consumption either by cooking or by defrosting and heating in a microwave oven. The smallest general loss of constituents caused by blanching was found in broad bean seeds, while the greatest loss was in French-bean pods. Cooking the same batch of the raw material increased the loss by 0-14%, depending on the species and the analysed element. In 100 g of product, prepared for consumption using the modified method (cooking-freezing-defrosting and heating in a microwave oven), the content of ash was greater by 4-12%; of phosphorus by 2-11%; of potassium by 16-36%; of magnesium by 17-31%; of iron by 7-23%; of zinc by 4-12%; of manganese by 4-16% and of copper by 3-13% compared with products obtained using the traditional method (blanching-freezing-cooking). The recorded level of the remaining elements was not always higher: in the case of calcium the difference varied from -2% to +7%; of sodium from -11% to +24%; of chromium from -14% to +9%; and of nickel from -4% to +54%.
Keywords: Broad bean; Pea, French-bean; Freezing; Cooking; Minerals

Surendra Prasad, Adrian Avinesh Chetty, Nitrate-N determination in leafy vegetables: Study of the effects of cooking and freezing, Food Chemistry, Volume 106, Issue 2, 15 January 2008, Pages 772-780, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.06.005.
(http://www.sciencedirect.com/science/article/B6T6R-4P06CN2-5/2/61ac509ef9d8ab259d6bc393cb0d3a4f)
Abstract:
Nitrate upon reduction to nitrite can cause methaemoglobinaemia or act as precursor in the endogenous formation of carcinogenic nitrosamines. The leafy vegetables are the major vehicle for the entry of nitrate into the human system. The present study was conducted to establish a flow injection analysis (FIA) technique to investigate the nitrate-N contents of four commonly consumed fresh leafy vegetables (Chinese cabbage, celery, lettuce and English cabbage) from market in Fiji. Two extraction techniques (activated carbon and alkaline extraction) were assessed to extract nitrate-N and the activated carbon extraction was preferred over alkaline extraction and applied. The recoveries of spiked nitrate-N in vegetable matrices ranged from 90.40% to 112.80% in activated carbon extraction with an average of 100.62%. The effects of cooking (boiling, baking and frying) and deep-freezing on the nitrate-N contents were also studied. Nitrate contents in selected leafy vegetables were determined by FIA coupled with Greiss protocol involving

sulfanilamide and N-(1-naphthyl)ethylenediamine dihydrochloride as color reagents. Nitrate was determined in the linear range from 1.0 to 20.0 mg L-1 with the method detection limit of 0.042 mg L-1 (0.34 mg kg-1). The results of the study show that nitrate contents in fresh leafy vegetables ranged from 1297 to 5658 mg kg-1. Boiling reduces nitrate content by 47-56% whereas frying in Soya bean oil elevates nitrate content by as much as 159-307%. No significant change was observed in nitrate content after baking. The deep-freezing of the selected leafy vegetables shows that nitrate-N content fluctuates slightly from the original nitrate-N values over the seven day period. The FIA throughput was 38 samples h-1.
Keywords: Nitrate; Nitrate in vegetables; Leafy vegetables; Flow injection analysis; Fiji leafy vegetables; Fiji

Bhaskarachary Kandlakunta, Ananthan Rajendran, Longvah Thingnganing, Carotene content of some common (cereals, pulses, vegetables, spices and condiments) and unconventional sources of plant origin, Food Chemistry, Volume 106, Issue 1, 1 January 2008, Pages 85-89, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.071.
(http://www.sciencedirect.com/science/article/B6T6R-4NX2NNH-1/2/64160aadf10a392ba97e6bd5440b33c0)
Abstract:
This study provides new data on the the total carotenoids and [beta]-carotene content of commonly consumed cereals, pulses, vegetables, spices and condiments. Separation of carotenoids by HPLC showed that [beta]-carotene is the predominant carotenoid in all the foods studied. Cereals and pulses appear to be poor sources of provitamin A precursors. Among the vegetables studied pumpkin, ridge gourd, green chillies, tomato, green peas, field beans and French beans are not only inexpensive but are better sources of [beta]-carotene (20-120 mg/100 g). Among the spices and condiments, red chilli (1310 mg/100 g) and Smilax (2136 mg/100 g), which are regularly used in Indian recipes are good sources of provitamin A precursors. The study also identified unconventional sources like Gulmohar, Peltiforum ferruginum,Lucern and Spirulina as rich sources of [beta]-carotene. Considering that Indian diets predominantly consist of cereals and pulses, choosing appropriate combinations of cereals and pulses will contribute significantly to overall vitamin A intakes. Together with our earlier efforts, the present study has generated a database of [beta]-carotene contents of Indian plant foods, which could be of help in the elimination of vitamin A deficiency.
Keywords: Cereals; Pulses; Vegetables; Spices and condiments; Unconventional sources; [beta]-carotene; HPLC

Jae-Hun Kim, Jin-Gyu Park, Ju-Woon Lee, Wang-Geun Kim, Young-Jin Chung, Myung-Woo Byun, The combined effects of N2-packaging, heating and gamma irradiation on the shelf-stability of Kimchi, Korean fermented vegetable, Food Control, Volume 19, Issue 1, January 2008, Pages 56-61, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2007.02.002.
(http://www.sciencedirect.com/science/article/B6T6S-4N2KT9K-1/2/8830c81ddf6c0582c2e88d0fc8d72fd8)
Abstract:
This study was conducted to evaluate the combined effects of N2-packaging (N2), mild heating at 60 [degree sign]C (HT) and gamma irradiation of 20 kGy (IR) on the shelf-stability and quality of Kimchi during storage at 35 [degree sign]C for 30 days. Total microbes including lactic acid bacteria were sterilized perfectly by the combination treatment of HT-IR or N2-HT-IR, and the acidity of Kimchi was not changed during storage. Irradiation softened textural property of Kimchi. However, combination of N2-packaging with heating and irradiation retarded this softening of Kimchi by high dose irradiation. Organoleptic qualities were improved by the combination treatment during the storage period.
Keywords: Kimchi; Gamma irradiation; N2-packaging; Heating; Combined treatment; Shelf-stability

P. Kumar, P. Coronel, V.D. Truong, J. Simunovic, K.R. Swartzel, K.P. Sandeep, G. Cartwright, Overcoming issues associated with the scale-up of a continuous flow microwave system for aseptic processing of vegetable purees, Food Research International, Volume 41, Issue 5, 2008, Pages 454-461, ISSN 0963-9969, DOI: 10.1016/j.foodres.2007.11.004.
(http://www.sciencedirect.com/science/article/B6T6V-4R6B2GX-1/2/1ca380c434985f3bc24cefae543f0b82)
Abstract:
Continuous flow microwave heating is a promising alternative to conventional heating for aseptic processing of low-acid vegetable purees. However, non-uniform temperature distribution and control of processing parameters are the major hurdles in the implementation of continuous flow microwave heating. This study was undertaken to overcome issues associated with the scale-up of a continuous flow microwave system from pilot plant scale to industrial scale and to conduct extended run times of 8 h based on the procedure developed. Dielectric properties and cross-sectional temperature profiles were measured during processing of green pea puree and carrot puree from 20 to 130 [degree sign]C in a 5-kW continuous flow microwave system. During processing of green peas, cross-sectional temperature differences of 8.6 and 5 [degree sign]C were observed at the outlet for center temperatures of 50 and 130 [degree sign]C respectively. These temperature differences were 32.9 and 3.6 [degree sign]C for carrot puree. For process scale-up, green pea puree and carrot puree were processed in a 60-kW microwave system with the objective of successful operation for at least 8 h. Static mixers, installed at the exit of each of the microwave applicators, improved temperature uniformity for both purees. Successful completion of processing the purees for 8 h in the 60-kW microwave system showed the potential for the scale-up of a continuous flow microwave system from pilot plant scale to industrial scale.
Keywords: Aseptic processing; Microwave heating; Vegetable purees; Scale-up

Alessandra Felix Costa Pereira, Marcio Jose Coelho Pontes, Francisco Fernandes Gambarra Neto, Sergio Ricardo Bezerra Santos, Roberto Kawakami Harrop Galvao, Mario Cesar Ugulino Araujo, NIR spectrometric determination of quality parameters in vegetable oils using iPLS and variable selection, Food Research International, Volume 41, Issue 4, 2008, Pages 341-348, ISSN 0963-9969, DOI: 10.1016/j.foodres.2007.12.013.
(http://www.sciencedirect.com/science/article/B6T6V-4RJ3WCF-5/2/6db7c0cc8b6723763e711e3f790c7c81)
Abstract:
This paper proposes an analytical method for simultaneous near-infrared (NIR) spectrometric determination of acidity, refractive index and viscosity in four types of edible vegetable oils (corn, soya, canola and sunflower). For this purpose, a combination of spectral range selection by interval partial least squares (iPLS) and variable selection by the successive projections algorithm (SPA) is proposed to obtain simple multiple linear regression (MLR) models based on a small subset of wavenumbers. An independent set of samples was employed to evaluate the prediction ability of the resulting MLR-SPA models. As a result, correlation values of 0.94, 0.98, and 0.96 were obtained between model predictions and reference values for acidity, refractive index, and viscosity, respectively. The results show that a single calibration can be successfully performed for each parameter, without the need for developing a separate model for each vegetable oil type.
Keywords: Edible vegetable oils; Near-infrared spectrometry; Acidity; Refractive index; Viscosity; Interval partial least squares; Successive projections algorithm; Multiple linear regression

Stefan Antonsson, Gunnar Henriksson, Mats Johansson, Mikael E. Lindstrom, Low Mw-lignin fractions together with vegetable oils as available oligomers for novel paper-coating applications as hydrophobic barrier, Industrial Crops and Products, Volume 27, Issue 1, January 2008, Pages 98-103, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2007.08.006.

(http://www.sciencedirect.com/science/article/B6T77-4PVY2PP-1/2/e0153f34c866fa37f7f3a73927cf3c38)
Abstract:
Lignin residues are available in large amounts as kraft lignin from chemical pulping processes. This lignin is mainly incinerated in recovery boilers. The recovery boilers are often the bottle-necks in the overall pulping process when pulp production increases are desired. Through cross-flow nano-filtration of the black liquor from kraft pulping, a low-molecular weight lignin fraction can be removed thus decreasing the organic load on the recovery boilers. The low-molecular weight lignin fraction furthermore exhibit different characteristics compared to other commercial kraft lignins and represents a new raw material source in novel applications.
The low-molecular weight lignin was used together with a vegetable oil to produce a new hydrophobic lignin derivative similar to suberin. The lignin and the lignin derivative was analysed with FT-IR, UV-vis and SEC. The ability of the product to make paper surfaces hydrophobic was also evaluated.
The results demonstrate the possibility to make a suberin-like lignin derivative that is potentially of interest in paper-coating applications due to its capability to interact well with wood fibres and make paper hydrophobic.
Keywords: Lignin; Black liquor; Nano-filtration; Hydrophobization; Linseed oil; Suberin

E. Galan, F. Prados, A. Pino, L. Tejada, J. Fernandez-Salguero, Influence of different amounts of vegetable coagulant from cardoon Cynara cardunculus and calf rennet on the proteolysis and sensory characteristics of cheeses made with sheep milk, International Dairy Journal, Volume 18, Issue 1, January 2008, Pages 93-98, ISSN 0958-6946, DOI: 10.1016/j.idairyj.2007.06.003.
(http://www.sciencedirect.com/science/article/B6T7C-4P6VD59-4/2/7eb37c3bfc624d0babef4ec10d2d51ee)
Abstract:
Different amounts of powdered vegetable coagulant (PVC) obtained from Cynara cardunculus (normal amount=PVC; double the normal amount=2PVC) were compared with calf rennet in cheese made from sheep milk, by determining different chemical, biochemical, and sensory characteristics throughout of 6 months of ripening. For most of the chemical parameters studied, no differences were observed between the coagulants assayed. However, significantly higher ($p<0.05$) levels of casein hydrolysis, measured as soluble nitrogen (SN), non-protein nitrogen (NPN), amino acid nitrogen (AAN) and ammonia-nitrogen (N.NH3), were observed after 2 days of ripening in cheeses produced with 2PVC compared with those made with normal amount of PVC. Furthermore, only the levels of SN and NPN were significantly higher ($p<0.05$) in cheeses produced with PVC than those obtained with calf rennet. The main sensory characteristics were enhanced ($p<0.05$) in cheeses obtained with vegetable coagulant in comparison to those made with calf rennet. The bitter taste of cheeses produced with 2PVC was not significantly stronger ($p>0.05$) than in those produced with a normal amount of vegetable coagulant (PVC). The increased proteolytic activity of the vegetable enzymes enables manufacturers to produce fully ripened cheeses (especially when the amount of the vegetable coagulant is doubled) with all the genuine end-product organoleptic characteristics approximately 3 months earlier than if calf rennet is used.
Keywords: Ewes' milk cheese; Cynara cardunculus; Proteolysis; Accelerated ripening; Vegetable coagulant

Fredrik Jutfelt, Rolf Erik Olsen, Bjorn Thrandur Bjornsson, Kristina Sundell, Parr-smolt transformation and dietary vegetable lipids affect intestinal nutrient uptake, barrier function and plasma cortisol levels in Atlantic salmon, Aquaculture, Volume 273, Issues 2-3, Smolt 2005: Proceedings of the 7th International Workshop on Salmonid Smoltification, 18 December 2007, Pages 298-311, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2007.10.012.

(http://www.sciencedirect.com/science/article/B6T4D-4PW0554-7/2/67bb234157c23506ffcd8db38d6b6998)
Abstract:
For Atlantic salmon, the gastrointestinal tract is the site of food digestion and nutrient uptake, a regulatory site for ion and water balance as well as a barrier against invading pathogens. During the parr-smolt transformation and subsequent seawater (SW) transfer, major changes occur in the intestine. A global shortage of fish oils (FO) for feed production is estimated to appear within a few years, and vegetable oils (VO) are being considered as alternatives for FO in fish feed production. However, VO influences the fatty acid composition of the polar lipids of cell membranes in the intestine which can disturb intestinal functions. A VO-based diet during the parr-smolt transformation, which is a sensitive developmental period, may cause adverse effects. Therefore, Atlantic salmon parr were fed either sunflower oil (SO) or FO as the major lipid source during out-of-season light controlled parr-smolt transformation. At three time points gill Na+,K+-ATPase activity and plasma levels of cortisol and growth hormone were assessed. Intestinal epithelia were sampled for assessment of nutrient absorption and bacterial translocation using an Ussing chamber in vitro system. While both dietary groups showed plasma hormone profiles indicative of successful parr-smolt transformation, the SO-fed fish had consistently increased cortisol levels compared to the FO-fed fish. Translocation of pathogenic bacteria increased, probably due to disturbed barrier functions, during the parr-smolt transformation. However, the fish fed the SO-diet maintained a higher barrier function compared to FO-fed fish, an effect that may be beneficial to these fish. Nutrient uptake was less affected by smoltification. Fish fed the SO-diet had higher uptake rates of amino acids and free fatty acids during mid-smoltification than fish fed the FO-diet. The combined effects of barrier function and nutrient uptake may suggest a positive effect of including vegetable lipids in the diet during the parr-smolt transformation. However, the vegetable lipid diet also seemed to act as a stressor and elevated the basal cortisol levels, which may be of concern in the context of general fish health and welfare.
Keywords: Ussing chamber; Smoltification; Growth hormone; Osmoregulation; Aeromonas salmonicida; Salmo salar; Bacterial translocation; Intestine; Amino acid uptake; Fatty acid uptake

A. Serena, K.E. Bach Knudsen, Chemical and physicochemical characterisation of co-products from the vegetable food and agro industries, Animal Feed Science and Technology, Volume 139, Issues 1-2, 3 December 2007, Pages 109-124, ISSN 0377-8401, DOI: 10.1016/j.anifeedsci.2006.12.003.
(http://www.sciencedirect.com/science/article/B6T42-4N08X1S-1/2/93d2b9e64e6519e041cd1277a851a8aa)
Abstract:
Six co-products from the vegetable food and agro industres in Denmark - brewer's spent grain, pea hull, seed residue (rye grass), potato pulp, sugar beet pulp and pectin residue - were collected eight times during two seasons (four samples from each season) (n = 8; N = 48). The samples were analysed for dry matter (DM), ash, sand, protein, amino acids, ether extract (EE), carbohydrate constituents, enzyme digestible organic matter (EDOM) and physicochemical properties--water binding capacity (WBC) and swelling. The co-products in general had a low DM (142-216 g/kg as is), EE (6-54 g/kg DM) and protein (61-116 g/kg DM) content and a high content of non-starch polysaccharide (430-743 g/kg DM). Exceptions, however, were seed residue and pea hull which had a DM content of 896-923 g/kg as is, and brewer's spent grain which had a EE and protein content of 117 and 215 g/kg DM, respectively. The sugar beet pulp and potato pulp had a high content of soluble fibre, which resulted in high WBC and swelling. Even though pectin residue had a high content of insoluble fibre constituents, WBC and swelling were high. Seed residue, brewer's spent grain and pea hull had high content of insoluble fibre, which was responsible for the relatively low EDOM. There was a variation from year to year in the concentration of ash ($P<0.0001$) and sand ($P=0.003$) in seed residue and for protein ($P=0.04$) and

EDOM (P=0.003) in pea hull. In conclusion, co-products from the vegetable food and agro industries are characterised by a high DF content resulting in high swelling and WBC and relatively low EDOM. The variability in chemical composition of most co-products was in the same relative range as found for barley and wheat in other national and Scandinavian studies.
Keywords: Carbohydrates; Co-products; Chemical composition; Physicochemical properties

Andrea Maier, Claire Chabanet, Benoist Schaal, Sylvie Issanchou, Peter Leathwood, Effects of repeated exposure on acceptance of initially disliked vegetables in 7-month old infants, Food Quality and Preference, Volume 18, Issue 8, December 2007, Pages 1023-1032, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2007.04.005.
(http://www.sciencedirect.com/science/article/B6T6T-4NKJ0D1-1/2/45ff578a8e13f2d089e84de652a4de08)
Abstract:
In the weeks following the start of weaning, 70 mothers were asked to identify a vegetable puree that their infant disliked and that they normally would not offer again. The 49 who did so were then asked to offer that vegetable on alternate days for 16 days, and to offer a well-liked one (carrot puree) on the other days. Amount eaten and acceptance were measured at each meal. On the first day of exposure, mean intake of the initially disliked vegetable was 39 +/- 29 g and of the liked one, 164 +/- 73 g (mean +/- SD). Over the following days, intake of the initially disliked vegetable increased rapidly and by the eighth exposure was 174 +/- 54 g, similar to that of the liked vegetable (186 +/- 68 g). A similar pattern of results was found for mother-reported liking ratings. These effects of repeated exposure appear to be long lasting because nine months later, 63% of the infants were still eating and liking the initially disliked vegetable. The present study shows that when a vegetable is initially disliked it is worth persisting in feeding it for at least eight subsequent meals.
Keywords: Infant; Food acceptance; Exposure effect; Vegetable; Weaning

M.S. Moreno, J.M. Montagna, Optimal Simultaneous Design and Operational Planning of Vegetable Extraction Processes, Food and Bioproducts Processing, Volume 85, Issue 4, December 2007, Pages 360-371, ISSN 0960-3085, DOI: 10.1205/fbp07069.
(http://www.sciencedirect.com/science/article/B8JGD-4S3RY69-5/2/e8c45c2bd0693d764c42fa5bf83b396e)
Abstract:
A general multiperiod linear optimization model is proposed in this study that targets the simultaneous design and operation planning decisions of a multiproduct batch plant for the production of vegetable extracts. A multiperiod environment is considered because of the market and/or seasonal fluctuations. Thereby, the model considers changes from period to period of demands, costs, prices and raw materials supplies. The objective function maximizes the net present value of the profit considering incomes, investments and resources costs, and both product and raw material inventory costs. In the plant design problem, the sequence of operations is already defined and the pursued goal is to determine both unit sizes and its configuration in the plant. Besides the usual duplication in parallel option, a novel design alternative is included which allows adding units in series to perform a given operation. The optimal design is determined by taking into account available discrete sizes of units which corresponds to the real procurement of equipments. The model is formulated by using the linear generalized disjunctive programming (LGDP). A particular plant that produces oleoresins (solvent extracts of herbs and spices) is used to illustrate the proposed approach. Nevertheless, the developed model is general and can thus be applied to any vegetable extraction process.
Keywords: vegetable extraction; multiperiod model; multiproduct batch plants; disjunctive programming

Jennifer K. McInerney, Cathryn A. Seccafien, Cynthia M. Stewart, Anthony R. Bird, Effects of high pressure processing on antioxidant activity, and total carotenoid content and availability, in vegetables, Innovative Food Science & Emerging Technologies, Volume 8, Issue 4, High Pressure Processing Special Issue Section, December 2007, Pages 543-548, ISSN 1466-8564, DOI: 10.1016/j.ifset.2007.04.005.
(http://www.sciencedirect.com/science/article/B6W6D-4NJ7WBT-3/2/878b87d94cbcf5255727b207d23a30be)
Abstract:
High pressure processing (HPP) is a relatively new food preservation processing technology that enhances food safety and shelf-life without compromising organoleptic qualities. There has been little research on the impact of HPP on the nutritional and health-promoting properties of foods to date and most of it has focused on juices and purees of fruit such as oranges and tomatoes. The objective of this study was to determine the effects of HPP treatment at two pressure levels (400 MPa; 600 MPa) on antioxidant activity, total carotenoid content and carotenoid availability in vitro, of three commonly consumed vegetables. Antioxidant capacity and total carotenoid content differed between vegetables but were unaffected by HPP treatment. In vitro availability of specific carotenoids also varied greatly between vegetables (3-35%). HPP altered availability of carotenoids according to the type of vegetable treated and processing pressure applied, however the magnitude of the responses was minor.Industrial relevance
This study provides further scientific evidence of the benefits of high pressure processing in retaining the nutritional attributes of fresh foods. Antioxidant activity and levels of carotenoids before and after exposure to high pressures (up to 600 MPa for 2 min) were essentially no different. Also, the data suggest that micronutrients and phytochemicals in certain vegetables may be made more bioavailable by high pressure treatment. From a nutritional perspective, high pressure processing is an attractive food preservation technology and clearly offers opportunities for horticultural and food processing industries to meet the growing demand from consumers for healthier food products.
Keywords: High pressure processing; Antioxidant capacity; Carotenoids; Lutein; Vegetables

Marilyn S. Townsend, Lucia L. Kaiser, Brief Psychosocial Fruit and Vegetable Tool Is Sensitive for the US Department of Agriculture's Nutrition Education Programs, Journal of the American Dietetic Association, Volume 107, Issue 12, December 2007, Pages 2120-2124, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.09.015.
(http://www.sciencedirect.com/science/article/B758G-4R7N538-N/2/54da7bdbf64ef2db156adbef874107c5)
Abstract:
The usefulness of an evaluation instrument is dependent on its reliability, validity, and ability to capture change. The latter psychometric characteristic is particularly important, yet is often neglected. The purpose of this study was to assess the sensitivity of a psychosocial fruit and vegetable evaluation tool for use by two US Department of Agriculture community-based programs. As part of a prospective randomized controlled trial, a sample of limited-resource women (n=93), recruited from eight counties, provided dietary recalls, behavioral assessments, and psychosocial assessments. A randomly selected subsample was used for venipuncture (n=55). Sensitivity of the tool was estimated using serum carotenoids, selected micronutrients, fruit/vegetable servings, and fruit/vegetable behaviors. Controlling for energy intake at baseline and change in energy intake, the change scores for the tool were correlated with reported changes in fruit and vegetable behaviors (r=0.28, P=0.01), vitamin C (r=0.25, P=0.02), and the biomarker serum carotenoids (r=0.31, P=0.02). This systematic process yielded a moderately sensitive evaluation tool useful with a limited-resource audience participating in two US Department of Agriculture programs. This is the first study to estimate sensitivity of a psychosocial tool for a fruit and vegetable intervention.

Kablan Tano, Mathias K. Oule, Gilles Doyon, Robert W. Lencki, Joseph Arul, Comparative evaluation of the effect of storage temperature fluctuation on modified atmosphere packages of selected fruit and vegetables, Postharvest Biology and Technology, Volume 46, Issue 3, December 2007, Pages 212-221, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.05.008.
(http://www.sciencedirect.com/science/article/B6TBJ-4PGH4C3-1/2/73aca7e3811dd428472bee16edf83a7b)
Abstract:
Mushrooms (Agaricus Bisporus cv. U3 Sylvan 381), broccoli (Brassica oleracea L. cv. Acadi) and mature-green tomatoes (Lycopersicon esculentum cv. Trust) were packaged in Modified Atmosphere (MA) containers and steady-state atmospheres of 5% O2-10% CO2, 3% O2-8% CO2, and 5% O2-5% CO2 were maintained a 4, 3 and 13 [degree sign]C, respectively. The packages were then subjected to a sequence of temperature fluctuations ([Delta]T = 10 [degree sign]C) during 12, 30 and 35 days for mushrooms, broccoli and tomatoes respectively to simulate storage and transport conditions. Temperature, relative humidity and atmospheric composition were followed throughout storage and quality attributes were evaluated at the end of the storage period. Temperature fluctuations had a major impact on the composition of the package atmospheres and on product quality. CO2 concentrations increased rapidly, reaching maxima of 16%, 15.5% and 11% for mushrooms, broccoli and tomatoes, respectively. O2 concentrations decreased to less than 1.5% for the three products. The quality of the products stored under the temperature fluctuating regime was severely affected as indicated by extensive browning, loss of firmness, weight loss increase, the level of ethanol in the plant tissue, and infection due to physiological damage and excessive condensation, compared to products stored at constant temperature. It was clear that temperature fluctuation, even if it should occur only once, can seriously compromise the benefits of modified atmosphere packaging and safety of the packaged produce. Major problems caused by temperature fluctuation must therefore, be addressed to improve the usefulness and reliability of modified atmosphere packaging technology.
Keywords: Modified atmosphere; Packaging; Temperature fluctuation; Respiration; Permeability

P.F. Almaida-Pagan, M.D. Hernandez, B. Garcia Garcia, J.A. Madrid, J. De Costa, P. Mendiola, Effects of total replacement of fish oil by vegetable oils on n-3 and n-6 polyunsaturated fatty acid desaturation and elongation in sharpsnout seabream (Diplodus puntazzo) hepatocytes and enterocytes, Aquaculture, Volume 272, Issues 1-4, 26 November 2007, Pages 589-598, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2007.08.017.
(http://www.sciencedirect.com/science/article/B6T4D-4PD4XB7-2/2/04566866f258d8b52cd3e2582817fcd7)
Abstract:
The main aim of this work was to determine the impact of total dietary fish oil replacement by vegetable oils on the fatty acid metabolism of sharpsnout seabream hepatocytes and digestive tract enterocytes. Three isonitrogenous (48% crude protein) and isoenergetic (23 MJ/kg) experimental diets were formulated using three different lipid sources: fish oil (FO), rich in n-3 HUFAs; soybean oil (SO), rich in linoleic acid (LA), and linseed oil (LO), especially rich in linolenic acid (LNA). These diets were fed, three times a day to apparent satiation, to triplicate groups of 30 sharpsnout seabream (with an initial average weight of 14.9 g) for nine months at 23.5 +/- 1.2 [degree sign]C. Inclusion of vegetable oils in sharpsnout seabream diet did not have any quantitative nutritional effects on desaturation/elongation of [1-14C] LNA and [1-14C] LA in isolated hepatocytes and total digestive tract enterocytes. Most of the radioactivity found in tissue lipid extracts (94% and 86% for hepatocytes and enterocytes, respectively) using silver nitrate thin-layer chromatography was recovered as [1-14C] C18 PUFA, clearly showing the lack of any significant desaturase/elongase activity in these cells. Only the high levels of HUFA in fish tissues pointed to the existence of some kind of regulatory mechanism, presumably based on HUFA

bioaccumulation and C18 PUFA oxidation. Moreover, direct measurements of [beta]-oxidation rates yielded very low values in all cases, the only significant difference being a higher oxidation rate in hepatocytes from fish fed LO versus FO diet.
Keywords: Desaturation; Hepatocytes; Enterocytes; Lipid metabolism; PUFA; [beta]-oxidation; Sharpsnout seabream; Soybean oil; Linseed oil

Helen M. Hendy, Keith E. Williams, Thomas S. Camise, Sandra Alderman, Jonathan Ivy, Jessica Reed, Overweight and average-weight children equally responsive to 'Kids Choice Program' to increase fruit and vegetable consumption, Appetite, Volume 49, Issue 3, November 2007, Pages 683-686, ISSN 0195-6663, DOI: 10.1016/j.appet.2007.06.003.
(http://www.sciencedirect.com/science/article/B6WB2-4P2YWG5-2/2/88f0f1fccf42bb56fa8db42b86ad9c01)
Abstract:
Secondary analyses were conducted for children participating in the school-based Kids Choice Program [Hendy, H. M., Williams, K., & Camise, T. (2005). 'Kids Choice' school lunch program increases children's fruit and vegetable acceptance. Appetite, 45, 250-263.] to examine whether fruit and vegetable consumption and preference ratings by overweight and average-weight children within the original sample were equally responsive to the program. The Kids Choice Program produced increased fruit and vegetable consumption by both overweight and average-weight children that lasted throughout the month-long program, while avoiding 'over-justification' drops in later fruit and vegetable preference ratings. We believe that the Kids Choice Program shows promise for encouraging overweight children to improve nutrition and weight management behaviors while in their everyday peer environment.
Keywords: Child obesity; Overweight children; Fruit and vegetables; School lunch

A.V.F. Ngowi, T.J. Mbise, A.S.M. Ijani, L. London, O.C. Ajayi, Smallholder vegetable farmers in Northern Tanzania: Pesticides use practices, perceptions, cost and health effects, Crop Protection, Volume 26, Issue 11, November 2007, Pages 1617-1624, ISSN 0261-2194, DOI: 10.1016/j.cropro.2007.01.008.
(http://www.sciencedirect.com/science/article/B6T5T-4NC509Y-1/2/9f7a746b68cfac7a6a8dd2220e5353b9)
Abstract:
Smallholder farmers in Northern Tanzania grow vegetables that include tomatoes, cabbages and onions and use many types of pesticides to control pests and diseases that attack these crops. Based on the use of questionnaires and interviews that were conducted in Arumeru, Monduli, Karatu and Moshi rural districts, this study investigates farmers' practices, perceptions and related cost and health effects on vegetable pest management using pesticides. The types of pesticides used by the farmers in the study areas were insecticides (59%), fungicides (29%) and herbicides (10%) with the remaining 2% being rodenticides. Pesticides were bought from pesticides shops (60%), general shops (30%) and cooperative shops (10%). The pesticides were supplied in containers ranging from 0.5 to 5 l or in packets ranging from 0.5 to 25 kg. Vendors often dispensed smaller quantities of pesticides in unlabelled containers. About a third of the farmers applied pesticides in mixtures. Up to 90% of this third had a maximum of 3 pesticides in a mixture. In all cases, there were no specific instructions either from the labels or extension workers regarding these tank mixtures. More than 50% of the respondents applied pesticides up to 5 times or more per cropping season depending on the crop. Insecticides and fungicides were routinely applied by 77% and 7%, respectively. Fifty-three percent of the farmers reported that the trend of pesticide use was increasing, while 33% was constant and 14% was decreasing. Sixty-eight percent of farmers reported having felt sick after routine application of pesticides. Pesticide-related health symptoms that were associated with pesticides use included skin problems and neurological system disturbances (dizziness, headache). Thirty-nine percent of farmers reported spending

between 20 and 130,200 Tanzanian shillings (0.018-116 US dollars) in a year on health due to pesticides. These results will contribute to the reformation of pesticide policies for safe and effective use of pesticides by smallholder farmers in Tanzania.
Keywords: Northern Tanzania; Smallholder farmers; Vegetables; Pesticides; Health; Cost

Jens Adler-Nissen, Continuous wok-frying of vegetables: Process parameters influencing scale up and product quality, Journal of Food Engineering, Volume 83, Issue 1, Future of Food Engineering - Selected Papers from the 2nd International Symposium of CIGR Section VI on Future of Food Engineering, November 2007, Pages 54-60, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.11.002.
(http://www.sciencedirect.com/science/article/B6T8J-4MMFVH6-1/2/0a70a37f9a34c5f8977afa98ccb5bd07)
Abstract:
A new process for continuous stir-frying in industrial scale has been introduced for producing convenience high-quality vegetables. The understanding of the dynamics of heat and mass transfer during stir-frying is crucial for scale up to industry. Studies on different vegetables cut to the same size show that heat and mass transfer is controlled by heat-induced shrinking of the vegetable pieces. The principal process parameters investigated are frying temperature, degree of loading (mass of raw material per turn of helix) and frying time. In addition to these external parameters, the geometry of the product pieces affects heat and mass transfer during the process in a predictable manner. The work has refined and substantiated a current mechanistic understanding of the continuous stir-frying process, and it provides the needed guidelines for scale up to industry.
Keywords: Vegetables; Wok; Continuous process; Heat and mass transfer

Diana Cassady, Karen M. Jetter, Jennifer Culp, Is Price a Barrier to Eating More Fruits and Vegetables for Low-Income Families?, Journal of the American Dietetic Association, Volume 107, Issue 11, November 2007, Pages 1909-1915, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.08.015.
(http://www.sciencedirect.com/science/article/B758G-4PXP0WM-2/2/d97db008a3eb4d4d67c900bc498cc41c)
Abstract: Objective
To determine if price is a barrier to fruit and vegetable consumption for low-income families by comparing the average cost of a market basket of fruits and vegetables from the Thrifty Food Plan and the Dietary Guidelines for Americans 2005 (2005 Dietary Guidelines), investigating variations in price by neighborhood income and by type of supermarket, and estimating the influence of a 2005 Dietary Guidelines fruit and vegetable basket on the food budget of a low-income family.Design
A market basket survey was conducted at 25 supermarkets across three time periods to allow for seasonal variation in produce prices.Setting
Stores were selected from census tracts with a variety of income levels in Sacramento, CA, and Los Angeles, CA.Main outcome measures
The average cost of a Thrifty Food Plan and 2005 Dietary Guidelines market basket for fruits and vegetables.Statistical analyses performed
Student t tests were used to compare the mean cost of market baskets.Results
The 2005 Dietary Guidelines market basket cost 4% less than the Thrifty Food Plan ($P<0.001$), and was significantly less expensive in low-income areas at $65 ($P<0.05$), and in bulk supermarkets at $59 ($P<0.05$). The 2005 Dietary Guidelines market basket would require a low-income family to devote 43% to 70% of their food budget to fruits and vegetables.Conclusions
Public policies should examine ways to make fruits and vegetables more affordable to low-income families.

Edwin Haslam, Vegetable tannins - Lessons of a phytochemical lifetime, Phytochemistry, Volume 68, Issues 22-24, Highlights in the Evolution of Phytochemistry: 50 Years of the Phytochemical Society of Europe, November-December 2007, Pages 2713-2721, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2007.09.009.
(http://www.sciencedirect.com/science/article/B6TH7-4R71DSW-1/2/082ec8503b8d53ede392265d47eb21a5)
Abstract:
After the early encouragement from the outstanding contribution in the early 1900s of Emil Fischer to an understanding of vegetable tannins the work of the following half-century had simply exemplified the complexity of the problems they presented. It was generally recognised [Freudenberg, 1920. Die Chemie der Naturliche Gerbstoffe. Springer, Berlin] that there was a broad division into condensed or non-hydrolysable and hydrolysable tannins but much else remained vague and untidy. In the 1950s Bate-Smith and Swain gave the lead into totally new ways of looking at these substances. They drew aside for the first time the curtains on the botanical aspects of these substances to reveal the rich vistas which lay beyond. It was to initiate remarkable progress in the next fifty years in the understanding of their chemistry and biochemistry; some of the principal developments of this work are reviewed herein.
Keywords: Vegetable tannins; Galloyl and hexahydroxydiphenoyl esters; Condensed proanthocyanidins; Structure and biosynthesis; Comparative biochemistry; Astringency

Bart M. Nicolai, Katrien Beullens, Els Bobelyn, Ann Peirs, Wouter Saeys, Karen I. Theron, Jeroen Lammertyn, Nondestructive measurement of fruit and vegetable quality by means of NIR spectroscopy: A review, Postharvest Biology and Technology, Volume 46, Issue 2, November 2007, Pages 99-118, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.06.024.
(http://www.sciencedirect.com/science/article/B6TBJ-4PPFT71-1/2/0abcbae5eb21bf6bd810a3fdb08f249a)
Abstract:
An overview is given of near infrared (NIR) spectroscopy for use in measuring quality attributes of horticultural produce. Different spectrophotometer designs and measurement principles are compared, and novel techniques, such as time and spatially resolved spectroscopy for the estimation of light absorption and scattering properties of vegetable tissue, as well as NIR multi- and hyperspectral imaging techniques are reviewed. Special attention is paid to recent developments in portable systems. Chemometrics is an essential part of NIR spectroscopy, and the available preprocessing and regression techniques, including nonlinear ones, such as kernel-based methods, are discussed. Robustness issues due to orchard and species effects and fluctuating temperatures are addressed. The problem of calibration transfer from one spectrophotometer to another is introduced, as well as techniques for calibration transfer. Most applications of NIR spectroscopy have focussed on the nondestructive measurement of soluble solids content of fruit where typically a root mean square error of prediction of 1[degree sign] Brix can be achieved, but also other applications involving texture, dry matter, acidity or disorders of fruit and vegetables have been reported. Areas where more research is required are identified.
Keywords: NIR; Near infrared; Fruit; Reflectance; Interactance; Transmittance; Chemometrics; PLS; Nondestructive; Quality

Shao-ting DU, Yong-song ZHANG, Xian-yong LIN, Accumulation of Nitrate in Vegetables and Its Possible Implications to Human Health, Agricultural Sciences in China, Volume 6, Issue 10, October 2007, Pages 1246-1255, ISSN 1671-2927, DOI: 10.1016/S1671-2927(07)60169-2.
(http://www.sciencedirect.com/science/article/B82XG-4R8H6TS-C/2/40bb0c0608b4e37f493fd5277ec68efa)
Abstract:

In recent times, there are two kinds of completely opposite viewpoints about the impacts of nitrate on human health. To further objectively understand the effects of nitrate on human health, both of harmfulness and possible benefits of nitrate to human body, it is discussed in this review from the aspects of nitrate accumulation in vegetables, the source of nitrate ingested into human body, and the transformation of nitrate in human body, as well as the pathogenesis and physiological functions of nitrate metabolism.
Keywords: vegetable; nitrate; methemoglobin; carcinogenesis; human health; NO; bacteria

Nguyen Manh Khai, Pham Quang Ha, Ingrid Oborn, Nutrient flows in small-scale peri-urban vegetable farming systems in Southeast Asia--A case study in Hanoi, Agriculture, Ecosystems & Environment, Volume 122, Issue 2, October 2007, Pages 192-202, ISSN 0167-8809, DOI: 10.1016/j.agee.2007.01.003.
(http://www.sciencedirect.com/science/article/B6T3Y-4N0XN8P-1/2/5c210313238de374d577e08812714b85)
Abstract:
In many peri-urban areas of Southeast Asia, land use has been transformed from rice-based to more profitable vegetable-based systems in order to meet the increasing market demand. The major management related flows of nitrogen (N), phosphorus (P), potassium (K), copper (Cu) and zinc (Zn) were quantified over a 1-year period for intensive small-scale aquatic and terrestrial vegetable systems situated in two peri-urban areas of Hanoi City, Vietnam. The two areas have different sources of irrigation water; wastewater from Hanoi City and water from the Red River upstream of Hanoi. The first nutrient balances for this region and farming systems are presented. The main sources of individual elements were quantified and the nutrient use efficiency estimated. The environmental risks for losses and/or soil accumulation were also assessed and discussed in relation to long-term sustainability and health aspects.
The primary source of nutrient input involved a combination of chemical fertilisers, manure (chicken) and irrigation water. A variable composition and availability of the latter two sources greatly influenced the relative magnitude of the final total loads for individual elements. Despite relatively good nutrient use efficiencies being demonstrated for N (46-86%) and K (66-94%), and to some extent also for P (19-46%), high inputs still resulted in substantial annual surpluses causing risks for losses to surface and ground waters. The surplus for N ranged from 85 to 882 kg ha-1 year-1, compared to P and K which were 109-196 and 20-306 kg ha-1 year-1, respectively. Those for Cu and Zn varied from 0.2 to 2.7 and from 0.6 to 7.7 kg ha-1 year-1, respectively, indicating high risk for soil accumulation and associated transfers through the food chain.
Wastewater irrigation contributed to high inputs, and excess use of organic and chemical fertilisers represent a major threat to the soil and water environment. Management options that improve nutrient use efficiency represent an important objective that will help reduce annual surpluses. A sustainable reuse of wastewater for irrigation in peri-urban farming systems can contribute significantly to the nutrient supply (assuming low concentrations of potential toxic or hazardous substances in the water). Nutrient inputs need to be better related to the crop need, e.g. through better knowledge about the nutrient concentrations in the wastewater and improved management of the amount of irrigation water being applied.
Keywords: Element balance; Nutrients; Copper; Zinc; Peri-urban; Southeast Asia

M. Valero, L.A. Hernandez-Herrero, M.J. Giner, Survival, isolation and characterization of a psychrotrophic Bacillus cereus strain from a mayonnaise-based ready-to-eat vegetable salad, Food Microbiology, Volume 24, Issues 7-8, October-December 2007, Pages 671-677, ISSN 0740-0020, DOI: 10.1016/j.fm.2007.04.005.
(http://www.sciencedirect.com/science/article/B6WFP-4NR18B6-1/2/55ac386a13e4e1cad7eaa42f24e67c8d)
Abstract:

Incidence and population levels of Bacillus cereus in American salad, an industrially manufactured, packaged and refrigerated deli salad containing vegetables and mustard, were determined. Of 12 ready-to-eat samples examined, one (8.3%) was positive for B. cereus at less than 5x103 cfu g-1. According to the ISO confirmation procedure, a strain was isolated and further characterized and identified as B. cereus EPSO-35AS by API 50CH/20E phenotypic system, combined with additional tests of motility, oxidase activity and anaerobic growth. This strain produced diarrhoeal enterotoxin in tryptic soy broth culture as detected by BCET-RPLA test, hydrolysed starch and had a low D90-value (2.1 min), with an estimated z-value of 6.79 [degree sign]C. After a lengthy lag phase (9-12 days of incubation), the strain was able to grow at 8 [degree sign]C in both nutrient broth and tyndallized carrot broth with specific growth rates from 0.009 to 0.037 h-1, respectively. In the vegetable substrate, lag time was approximately 3 days (66 h) shorter than in laboratory medium. The effect of temperature abuses on the safety of the product during the time of use or consumption is discussed.
Keywords: Psychrotrophic Bacillus cereus; Enterotoxin; American salad; Deli salads; Ready-to-eat salads; API system tests

C.L. Little, F.C. Taylor, S.K. Sagoo, I.A. Gillespie, K. Grant, J. McLauchlin, Prevalence and level of Listeria monocytogenes and other Listeria species in retail pre-packaged mixed vegetable salads in the UK, Food Microbiology, Volume 24, Issues 7-8, October-December 2007, Pages 711-717, ISSN 0740-0020, DOI: 10.1016/j.fm.2007.03.009.
(http://www.sciencedirect.com/science/article/B6WFP-4NDDM0Y-1/2/1c1e388614f5ad5416afa1efdfa58e1c)
Abstract:
As part of the European Commission (EC) co-ordinated programme for 2005, a study of pre-packaged ready-to-eat (RTE) mixed salads containing meat or seafood ingredients from retail premises was undertaken in the UK to determine the frequency and level of Listeria monocytogenes in these products. Almost all (99.8%; 2682/2686) samples were of satisfactory/acceptable microbiological quality. Two (0.1%) samples exceeded EC legal food safety criteria due to the presence of L. monocytogenes in excess of 100 cfu g-1 (1.7x102, 9.9x102 cfu g-1) while another two (0.1%) were unsatisfactory due to L. welshimeri levels over 100 cfu g-1 (1.2x103, 6.0x103 cfu g-1). Overall contamination of Listeria spp. and L. monocytogenes found in samples of mixed salads in the UK was 10.8% and 4.8%, respectively. Almost twice as many salad samples with meat ingredients were contaminated with Listeria spp. and L. monocytogenes (14.7% and 6.0%, respectively) compared to samples with seafood ingredients (7.4% and 3.8%, respectively). Pre-packaged mixed salads were contaminated with Listeria spp. and L. monocytogenes more frequently when: collected from sandwich shops; not packaged on the premises; stored or displayed above 8 [degree sign]C. This study demonstrates that the control of L. monocytogenes in food manufacturing and at retail sale is essential in order to minimize the potential for this bacterium to be present in mixed salads at the point of consumption at levels hazardous to health.
Keywords: Vegetable salads; Listeria monocytogenes; Contamination; Food safety

Ana Allende, Beatriz Martinez, Victoria Selma, Maria I. Gil, Juan E. Suarez, Ana Rodriguez, Growth and bacteriocin production by lactic acid bacteria in vegetable broth and their effectiveness at reducing Listeria monocytogenes in vitro and in fresh-cut lettuce, Food Microbiology, Volume 24, Issues 7-8, October-December 2007, Pages 759-766, ISSN 0740-0020, DOI: 10.1016/j.fm.2007.03.002.
(http://www.sciencedirect.com/science/article/B6WFP-4N6FFR6-3/2/60ca7176c36e9abaa556200c15f401b0)
Abstract:

The fresh-cut fruit and vegetable industry is searching for alternatives to replace chemical treatments with biopreservative approaches that ensure the safety of the product and fulfil consumer preferences for minimally processed foods. In this study, the use of bacteriocins produced by lactic acid bacteria has been tested as a substitute for chemical disinfection of fresh-cut iceberg lettuce. First, the ability of several non-plant origin bacteriocinogenic strains (nisin Z+, plantaricin C+, lacticin 481+, coagulin+ or pediocin PA-1+) to grow in a lettuce extract at 4 [degree sign]C, 10 [degree sign]C and 32 [degree sign]C was tested. All strains were able to grow, but bacteriocin production was predominantly detected at 32 [degree sign]C. Addition of bacteriocinogenic supernatants (nisin+, coagulin+ and a nisin-coagulin+ cocktail) to tryptic-soy agar plates inoculated with Listeria monocytogenes reduced Listeria counts by approximately 1-1.5 log units compared with the control plates without bacteriocin, after 48 h of storage at 4 [degree sign]C. The effect of washing with bacteriocin-containing solutions on survival and proliferation of Listeria monocytogenes was also evaluated in fresh-cut lettuce packaged in macro-perforated polypropylene bags and stored for 7 days at 4 [degree sign]C. Washing fresh-cut lettuce with these solutions decreased the viability of Listeria monocytogenes by 1.2-1.6 log units immediately after treatment, but, during storage at 4 [degree sign]C, bacteriocin treatments only exerted minimal control over the growth of the pathogen. Natural microbiota were little affected by bacteriocins during storage.
Keywords: Pathogen; Sanitation; Bacteriocinogenic; Fresh processed vegetables; Biopreservation

Helle Alsted Sondergaard, Merete Edelenbos, What parents prefer and children like - Investigating choice of vegetable-based food for children, Food Quality and Preference, Volume 18, Issue 7, October 2007, Pages 949-962, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2007.03.009.
(http://www.sciencedirect.com/science/article/B6T6T-4NDMN97-1/2/0b4217fb21a88683d90be307a6177684)
Abstract:
The inherent challenge of investigating food choice of new products for children is that more than one person is involved in the long-term decision-making. Parents decide in the purchase situation while children pass their verdict when they consume the meal. In this paper we suggest linking family decision-making and food choice, and reveal results from two empirical studies of vegetable-based food for children. One study discloses parents' preferences regarding different food concepts while the other looks into children's liking before and after tasting the products. Results show that parents know fairly well what children like. Sharing the meal experience with their children and having meal variation options are important benefits for parents. Parents are more concerned about health while children prefer products that look familiar. However, after tasting an unfamiliar product children are less reserved.
Keywords: Vegetable-based food for children; Family decision-making; Means-end chain theory; Food choice; Favourite vegetables

Marie-Josee Dumont, Suresh S. Narine, Soapstock and deodorizer distillates from North American vegetable oils: Review on their characterization, extraction and utilization, Food Research International, Volume 40, Issue 8, October 2007, Pages 957-974, ISSN 0963-9969, DOI: 10.1016/j.foodres.2007.06.006.
(http://www.sciencedirect.com/science/article/B6T6V-4P06C94-1/2/023936d0e211b8aed858b7cbf7e80dd9)
Abstract:
Soapstock and deodorizer distillates are the major by-products from vegetable oil refining. They have little commercial value and are sold at a fraction of the oil cost. However, their characterization reveals the presence of numerous types of compounds, which could be extremely valuable if extracted at low cost. The literature in this area is discontinuous and warrants the effort to produce a comprehensive review. The aim of this review is to combine and condense the body

of research performed on these materials, as well as to suggest the best routes for characterization and extraction. Utilization of the components is also discussed.
Keywords: Vegetable oils; Soapstock; Deodorizer distillate; Characterization; Extraction; Utilizations

Sanjay Sarang, Sudhir K. Sastry, Diffusion and equilibrium distribution coefficients of salt within vegetable tissue: Effects of salt concentration and temperature, Journal of Food Engineering, Volume 82, Issue 3, October 2007, Pages 377-382, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2007.02.058.
(http://www.sciencedirect.com/science/article/B6T8J-4N7RXWC-1/2/91030ce79c6e47b0537d3beb714c586d)
Abstract:
The apparent diffusion coefficient and equilibrium distribution coefficient of sodium chloride in Chinese water chestnut were determined for salt solution concentrations between 5% and 10% and at temperatures in the range 25-80 [degree sign]C. Equilibrium distribution coefficient values were close to 1.0 and did not depend on salt concentration or temperature. The apparent diffusion coefficient of salt in water chestnut is not dependent on the concentration of the salt solution and significantly increased with temperature ($p = 0.001$) following the Arrhenius equation.
Keywords: Diffusion coefficient; Equilibrium distribution coefficient; Ohmic heating; Temperature dependence; Concentration dependence; Chinese water chestnut

M. Matsushita, N.M. Tazinafo, R.G. Padre, C.C. Oliveira, N.E. Souza, J.V. Visentainer, F.A.F. Macedo, N.P. Ribas, Fatty acid profile of milk from Saanen goats fed a diet enriched with three vegetable oils, Small Ruminant Research, Volume 72, Issues 2-3, October 2007, Pages 127-132, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2006.09.003.
(http://www.sciencedirect.com/science/article/B6TC5-4M3J0VW-1/2/cff3dd6c42d0c433f93bbed07e3ebf69)
Abstract:
Characterization of fatty acid profiles and physico-chemical parameters of milk samples from Saanen goats fed diets enriched with 3% of three different vegetable oils (soybean, canola and sunflower) were carried out. Animals were arranged in a double 3 x 3 Latin square design and each pair of goats received diets containing one of the oils for 21 days--14 days for animal adaptation plus 7 days for milk sampling. Samples were collected twice a day. Milk from animals that received sunflower oil presented the highest conjugated linoleic acid (CLA) concentrations, whereas animals receiving canola oil had the lowest levels. Animals treated with soybean oil had the highest monounsaturated and polyunsatured fatty acids concentrations and the lowest concentration of saturated fatty acids. The n - 6/n - 3 ratios were 3.90, 5.77 and 4.24 for milk of animals treated with soybean, canola and sunflower oils, respectively. Significant differences ($P < 0.05$) between soybean and canola oil and between canola and sunflower oil treatments were observed. It is concluded that nutritional milk quality can be improved by adding vegetable oils to animal feed.
Keywords: Goat milk composition; Polyunsaturated fatty acids; Conjugated linoleic acid; Monounsaturated fatty acids

Vegard Denstadli, Trond Storebakken, Birger Svihus, Anders Skrede, A comparison of online phytase pre-treatment of vegetable feed ingredients and phytase coating in diets for Atlantic salmon (Salmo salar L.) reared in cold water, Aquaculture, Volume 269, Issues 1-4, 14 September 2007, Pages 414-426, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2007.02.033.
(http://www.sciencedirect.com/science/article/B6T4D-4N4YMBR-1/2/cb6ff9432eaa7fc102e352e03915e758)
Abstract:

In this trial with Atlantic salmon (initial weight, 142 g) raised in 8 [degree sign]C seawater, the effect of coating or online pre-treatment with phytase was investigated. Four diets were produced: one fishmeal (FM) diet and three diets -- SPC, SPC-P and SPC-PPT -- in which 60% of the protein from fishmeal was replaced by soy protein concentrate. The SPC diet did not include phytase; the SPC-P diet was coated with phytase; and in the SPC-PPT diet the vegetable ingredients were incubated with phytase online during feed production. In the latter two diets, phytase was added at a level of 2900 phytase units (FTU) per kg of wheat and soy protein concentrate. Each diet was fed to three groups of 55 fish for 76 days. Growth was not significantly affected by the dietary treatments. The apparent digestibility of protein did not differ significantly, and most of the protein was digested in the pyloric intestine. The digestibility of ash and phosphorus (P) was significantly higher for the pre-treated SPC-PPT diet than for the SPC and the SPC-P diets. The concentration of phosphate in plasma was significantly higher for the FM diet than for the other diets, while fish fed the SPC-PPT diet had a significantly higher concentration of plasma phosphate compared with the SPC and the SPC-P diets. The content of ash, P, calcium (Ca), magnesium (Mg) and zinc (Zn) in whole fish and in vertebrae was generally higher in salmon fed the FM diet than in those fed the three SPC diets. The SPC-PPT diet resulted in a significantly higher content of ash, P and Mg in vertebra than the SPC and the SPC-P diets. In conclusion, online phytase pre-treatment was efficient in improving mineral availability, while phytase coating was inefficient for salmon reared at 8 [degree sign]C.
Keywords: Atlantic salmon; Phytic acid; Phytase; Pre-treatment; Cold water; Mineral availability

David S. Francis, Giovanni M. Turchini, Paul L. Jones, Sena S. De Silva, Effects of fish oil substitution with a mix blend vegetable oil on nutrient digestibility in Murray cod, Maccullochella peelii peelii, Aquaculture, Volume 269, Issues 1-4, 14 September 2007, Pages 447-455, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2007.05.021.
(http://www.sciencedirect.com/science/article/B6T4D-4NTJGX6-4/2/9d4cd8f82f6b5be84e1b97c0b3a37ac2)
Keywords: Fatty acid digestibility; Fish oil substitution; Vegetable oils

Arun Chanchaichaovivat, Pintip Ruenwongsa, Bhinyo Panijpan, Screening and identification of yeast strains from fruits and vegetables: Potential for biological control of postharvest chilli anthracnose (Colletotrichum capsici), Biological Control, Volume 42, Issue 3, September 2007, Pages 326-335, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.05.016.
(http://www.sciencedirect.com/science/article/B6WBP-4NXHC9K-2/2/5b3c7436fa0916a0d7be470698e902b5)
Abstract:
Yeasts antagonistic to Colletotrichum capsici were isolated from Thai fruits and vegetables. Four antagonists (R13, R6, ER1, and L2) were found that inhibited C. capsici growth with biocontrol efficacies of 93.3%, 83.1%, 76.6%, and 66.4%, respectively. Identification by 26S rDNA, and ITS region sequence together with physiological and morphological characteristics, showed them to be Pichia guilliermondii, Candida musae, Issatchenkia orientalis, and Candida quercitrusa, in order of their efficacy. P. guilliermondii strain R13 showed efficacy in reducing disease incidence on C. capsici infected chilli fruits to as low as 6.5%. Lower disease incidence was observed at lower storage temperature. The application of P. guilliermondii is more effective for preserving chilli fruits than conventional preservation with chlorinated water.
Keywords: Biocontrol; Antagonist; Yeast; Pichia guilliermondii; Colletotrichum capsici; Chilli fruits; Postharvest

W.S. Monfort, A.S. Csinos, J. Desaeger, K. Seebold, T.M. Webster, J.C. Diaz-Perez, Evaluating Brassica species as an alternative control measure for root-knot nematode (M. incognita) in

Georgia vegetable plasticulture, Crop Protection, Volume 26, Issue 9, September 2007, Pages 1359-1368, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.11.008.
(http://www.sciencedirect.com/science/article/B6T5T-4N3P4YH-1/2/a28f8bc78abd668cff3a1a9eaf59fb09)
Abstract:
Multiple Brassica species commonly grown in Georgia were evaluated as a potential alternative to methyl bromide for management of root-knot nematode in vegetables. Brassica species produce general biocides called glucosinolates and were grown as cover crops and incorporated as green manures prior to transplanting of vegetable crop. Nematicidal activity of the Brassica species was based on net changes in nematode population and root damage caused by root-knot infection and feeding. Plant growth and crop yield was also evaluated to determine the response of the subsequent vegetable crop to the incorporated Brassica species. Incorporation of select Brassica species reduced root-knot populations and root damage caused by root-knot infection comparable to non-Brassica species cover crops with metam sodium in most years; however, the level and consistency of the nematicidal activity varied between and within Brassica species. Variations in plant growth and yield were also observed among and with Brassica and non-Brassica species. Generally, increased growth and yield corresponded with cover crop treatments that had the lowest levels of root-knot nematode populations at planting of the subsequent crop. Several cover crop treatments had a negative affect on the growth and yield potential of the vegetable crops. Therefore, a producer will need to choose a Brassica species cover crop that can significantly reduce nematode populations without adversely affecting the growth/yield of the subsequent vegetable crop.
Keywords: Glucosinolates; Isothiocynates; Brassica species; Root-knot nematode; Vegetable plasticulture; Methyl bromide

Joel Felix, Douglas J. Doohan, Dain Bruins, Differential vegetable crop responses to mesotrione soil residues a year after application, Crop Protection, Volume 26, Issue 9, September 2007, Pages 1395-1403, ISSN 0261-2194, DOI: 10.1016/j.cropro.2006.11.013.
(http://www.sciencedirect.com/science/article/B6T5T-4MW900C-1/2/c33b3cec11b87e28a8f752724355428c)
Abstract:
Field experiments were conducted in 2002 and 2003 at Fremont and Wooster, Ohio to characterize the effect of mesotrione herbicide soil residues 12 months after application to field maize on rotational snapbean, cabbage, bell pepper, processing tomato, pickling cucumber, and red clover. Mesotrione was applied either pre-emergence or post-emergence to field maize in 2002 at 0, 210, 420, and 840 or 0, 105, 210, and 420 (0, 1x, 2x, 4x rate), respectively. The response of rotational vegetable crops to mesotrione soil residues varied by site with plants at Fremont displaying greater injury. Snapbean was the most affected, and the yield was lowest at Fremont ranging from 0 to 0.18 T/ha for 4x rate to 0.27 and 0.9 T/ha for 1x, pre-emergence and post-emergence, respectively. Snapbean yield was reduced by 60% and 31% when grown in residues of mesotrione 4x rate, pre-emergence and post-emergence, respectively, when compared to the untreated treatment (14.24 T/ha). Cabbage injury was very high at Fremont regardless of the use rate, but there was no reduction in yield at Wooster. When grown in soil residues from 2x to 4x rates, processing tomato yield was reduced to 32% and 33%, and 28% and 23% compared to untreated control (85 T/ha). A similar trend was observed for bell peppers growing at Wooster. Similarly, the yield for pickling cucumber was reduced 18% when grown in 4x rate mesotrione soil residues at Wooster compared to the untreated control (30 T/ha). At Fremont, the pickling cucumber yield was reduced regardless of the application timing and rate. The levels of injury are too high for growers to rotate vegetables 12 months following application of mesotrione to field maize.
Keywords: Mesotrione; Herbicide soil residues; Carryover; Rotational crops; Vegetable crops

T. Aktas, S. Fujii, Y. Kawano, S. Yamamoto, Effects of Pretreatments of Sliced Vegetables with Trehalose on Drying Characteristics and Quality of Dried Products, Food and Bioproducts Processing, Volume 85, Issue 3, September 2007, Pages 178-183, ISSN 0960-3085, DOI: 10.1205/fbp07037.
(http://www.sciencedirect.com/science/article/B8JGD-4S1T0R4-5/2/8f4f37b78ac1c8716c06202d76647e90)
Abstract:
Effects of pretreatments with trehalose on drying of sliced vegetables (potato and carrot) were experimentally investigated. Two different pretreatment methods were tested. Sliced vegetables were steam-blanched and then immersed in a sugar solution. In another method sliced vegetables were coated with sugar powder, and then steam-blanched. Solid gain and water loss during pretreatment were measured. The isothermal drying experiments were carried out at 303, 313 and 323 K. Sorption isotherms of dried samples were determined by a standard gravimetric method at 303, 313 and 323 K. Pretreatments reduced the water content of vegetable samples due to osmotic dehydration. Less shrinkage, better colour properties and better cell reconstruction properties were observed for samples pretreated with trehalose either with solution or with powder.
Keywords: vegetable drying; trehalose pretreatment; osmotic dehydration; sorption isotherms

Young-Nam Kim, David W. Giraud, Judy A. Driskell, Tocopherol and carotenoid contents of selected Korean fruits and vegetables, Journal of Food Composition and Analysis, Volume 20, Issue 6, September 2007, Pages 458-465, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.02.001.
(http://www.sciencedirect.com/science/article/B6WJH-4N4J2YV-1/2/f91bca4a314550e2a53b50e7e45fee85)
Abstract:
The tocopherol ([alpha]-, [gamma]-, and [delta]-) and carotenoid ([alpha]-carotene, [beta]-carotene, [beta]-cryptoxanthin, lutein, zeaxanthin, and lycopene) contents of seven raw fruits and 14 raw or processed (cooked or fermented) vegetables commonly consumed by young children in Kwangju, Republic of Korea, were determined using reversed-phase HPLC. All samples were obtained from three different locations (households or local markets) in Kwangju during summer, 2005. All fruits and vegetables in this study had detectable quantities of [alpha]-tocopherol, while many had detectable quantities of [gamma]- and [delta]-tocopherols. [beta]-carotene was contained in all samples except cooked bracken. Except for sweet potato, all fruits and vegetables contained lutein. [beta]-cryptoxanthin and lycopene were not detected in any of the cooked vegetables in this study. Also, none of the fermented vegetables (kimchi) had detectable levels of zeaxanthin and lycopene. The findings of this study may be valuable for use in Korean and other food composition databases.
Keywords: Antioxidants; Tocopherols; Carotenoids; Fruits; Vegetables; Korean foods

Paivi Ekholm, Heli Reinivuo, Pirjo Mattila, Heikki Pakkala, Jani Koponen, Anu Happonen, Jarkko Hellstrom, Marja-Leena Ovaskainen, Changes in the mineral and trace element contents of cereals, fruits and vegetables in Finland, Journal of Food Composition and Analysis, Volume 20, Issue 6, September 2007, Pages 487-495, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.02.007.
(http://www.sciencedirect.com/science/article/B6WJH-4N61FT2-1/2/4cbe81d5bb43bf0856755894e610657b)
Abstract:
The contents of calcium, potassium, magnesium, phosphorous, aluminium, cobalt, copper, iron, manganese, nickel, selenium, zinc, cadmium and lead in cereal products, fruits and vegetables were analysed and the results were compared with those obtained 30 years previously in food samples from Finland. There were significant changes in the trace elements. In most cases trace elements contents are now lower than before. Only the selenium content of foods had clearly

increased in Finland, through the use of selenium-supplemented fertilizers. There was a change in average mineral element content only for potassium, whose content was significantly lower than in the middle of the 1970s. We found that trace element density in vegetable foods has decreased over the past three decades. Per capita daily intakes of mineral elements in the 2000s were lower than in the 1970s, although the consumption of fruits and vegetables has increased since 1970s.
Keywords: Mineral element content; Trace element content; Cereal product; Fruits; Root vegetables; Vegetables; Berries; Intake

Cibele Cristina Osawa, Lireny Aparecida Guaraldo Goncalves, Sidnei Ragazzi, Correlation between free fatty acids of vegetable oils evaluated by rapid tests and by the official method, Journal of Food Composition and Analysis, Volume 20, Issue 6, September 2007, Pages 523-528, ISSN 0889-1575, DOI: 10.1016/j.jfca.2007.02.002.
(http://www.sciencedirect.com/science/article/B6WJH-4N4YMG7-1/2/d83622a7f77a11e716749f672b713b01)
Abstract:
The quantity of free fatty acids (FFA) provides important information about the hydrolytic rancidity in continuous deep-fat frying processes. The official method for the determination of FFA, based on titration, is slow and requires a trained analyst. FaSafe(TM) kits provide simple alternatives to colorimetrically measure the FFA content. They are fast, require less material, reagents and samples, and occupy smaller areas. The present study was designed to correlate the results obtained using the official AOCS method (Ca 5a-40) with those obtained using these kits. Linear regression and ANOVA tests were used for validation of the model and the comparison of averages, respectively. Samples of olive oils (n=40), crude and degummed vegetable oils (n=10), and refined oils (n=16) were analysed. The presence of colour in crude and degummed oils probably interfered with the value of the results obtained with the kits. For other samples, correlation equations were established: y=0.86x+0.05 (olive oils) and y=0.96x+0.01 (refined and olive oils), with a correlation coefficient of 0.99 for each. There was no statistically significant difference between the average values obtained by the two methodologies for either refined oils or olive oils.
Keywords: Free fatty acid; Kits; Correlation; DiaMed F.A.T.S.; AOCS Ca 5a-40 method; Fats and oils

Natalie Diane Riediger, Shahin Shooshtari, Mohammed Hassan Moghadasian, The Influence of Sociodemographic Factors on Patterns of Fruit and Vegetable Consumption in Canadian Adolescents, Journal of the American Dietetic Association, Volume 107, Issue 9, September 2007, Pages 1511-1518, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.06.015.
(http://www.sciencedirect.com/science/article/B758G-4PHPPTY-H/2/84731c262ed392582ce39fa51619280d)
Abstract: Background
Poor dietary habits may increase risk for obesity and chronic diseases among Canadian adolescents.Objectives
The aims of the present study were to: (a) establish the patterns of fruit and vegetable intake by Canadian adolescents, and (b) identify the impact of sociodemographic factors--including age, household income, household education, ethnicity, living arrangement, and location--on the pattern of fruit and vegetable intake in this population.Design
This is a cross-sectional study using the data from the Canadian Community Health Survey, Cycle 2.1, Public Use File. The survey used questions similar to a food frequency questionnaire.Methods
Total fruit and vegetable intake of 18,524 Canadian adolescents (12 to 19 years old) was cross-tabulated between two age groups (12 to 14 years old [n=7,410] and 15 to 19 years old [n=11,114]) by sex, level of household education, total household income, ethnicity, living arrangement, and geographical location.Results

The data revealed that a 38.3% of Canadian adolescents in this study consumed fruits and vegetables five to 10 times per day; fewer older adolescents (15- to 19-year-olds) reported eating fruits and vegetables at that frequency as compared with the younger subgroup (12- to 14-year-olds) (P<0.001). Household education and income independently had a significant (P<0.001) positive impact on fruit and vegetable consumption. Females reported a significantly (P<0.05) higher frequency of intake than did males. Adolescents living in homes with only one parent reported a significantly (P<0.005) lower frequency of intake, as compared with adolescents living with two parents.Conclusions
These results may help to identify adolescent groups at risk for poor eating habits and support the implementation of programs to encourage higher fruit and vegetable intakes.

Shi-jun LIU, Jia-qi WANG, Deng-pan BU, Hong-yang WEI, Ling-yun ZHOU, Qiu-jiang LUO, The Effect of Dietary Vegetable Oilseeds Supplement on Fatty Acid Profiles in Milk Fat from Lactating Dairy Cows, Agricultural Sciences in China, Volume 6, Issue 8, August 2007, Pages 1002-1008, ISSN 1671-2927, DOI: 10.1016/S1671-2927(07)60140-0.
(http://www.sciencedirect.com/science/article/B82XG-4PM8WN0-F/2/1544e9cdb23e2bc2741d43d1cbdbe712)
Abstract: Abstract
To determine the effect of dietary supplementation with vegetable oilseeds on the composition of bovine milk fatty acids (FAs), 40 Holstein dairy cows were used with a complete randomized design. At the beginning of the experiment, the cows were 150+/-25 day in milk (DIM). Total duration of the experiment was six weeks. Measurements were made during the last three weeks. Cows in four treatments were fed with a basal diet (CT) or basal diet supplemented with either whole full fat soybean (WFS), full fat expanded soybean (FPS) or whole full fat soybean with whole cottonseed and full fat expanded soybean (MIX). The composition of the milk fat was analyzed by gas chromatography. Relative to control, the conjugated linoleic acid (CLA) concentration in milk fat from cows on FPS was significantly increased by 83.88% (P < 0.05). The proportions of C12:0 were decreased by 35.7, 35.51, and 38.65% in milk fat from cows on WFS, MIX, and FPS compared with cows on CT. Similar decreases in C14:0 were 23.83, 24.85, and 31.48% in WFS, MIX, and FPS treatments, respectively. Feeding vegetable oilseeds increased the proportion of healthy FAs (mainly CLA), whereas decreased the concentration of C12:0 and C14:0. Therefore, milk and dairy products would have higher nutritive and therapeutic value.
Keywords: dairy cattle; vegetable oilseed; conjugated linoleic acid; milk fat

B. Odhav, S. Beekrum, Us Akula, H. Baijnath, Preliminary assessment of nutritional value of traditional leafy vegetables in KwaZulu-Natal, South Africa, Journal of Food Composition and Analysis, Volume 20, Issue 5, August 2007, Pages 430-435, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.04.015.
(http://www.sciencedirect.com/science/article/B6WJH-4MSR8N9-1/2/790ad02f50ea97c02449da3b3736de79)
Abstract:
In this report, we present preliminary nutritional data for traditional leafy vegetables collected in Kwa Zulu-Natal, South Africa, including their content of mineral elements (Ca, P, Na, Zn, Mg, Mn and Fe) and antioxidant levels. Twenty vegetables were studied: Amaranthus dubius, Amaranthus hybridus, Amaranthus spinosus, Asystasia gangetica, Bidens pilosa, Centella asiatica, Ceratotheca triloba, Chenopodium album, Cleome monophylla, Cucumis metuliferus, Emex australis, Galinsoga parviflora, Justicia flava, Momordica balsamina, Oxygonum sinuatum, Physalis viscosa, Portulaca oleracea, Senna occidentalis, Solanum nodiflorum and Wahlenbergia undulata. The results of this study provide evidence that these local traditional vegetables, which do not require formal cultivation, could be important contributors to improving the nutritional content of rural and urban people. From this study, it was determined that twelve leafy vegetables,

namely A. dubius, A. gangetica, A. hybridus, A. spinosus, C. metuliferus, C. monophylla, C. triloba, G. parviflora, J. flava, M. balsamina, P. viscosa and W. undulata provide mineral concentrations exceeding 1% of plant dry weight and are much higher than typical mineral concentrations in conventional edible leafy vegetables; they are thus recommended for future commercial cultivation. High levels of antioxidant activity (96%) were noticed in J. flava and P. oleraceae.
Keywords: Nutritional value; Mineral content; Antioxidants; Food supplement; African leafy vegetables

J. Gromis, D. Wall, J. Stotts, K. Bodes, B. Lohse, Higher Fruit and Vegetable Intake Is Not Associated with Food Security or Food Stamp Use, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A25, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.323.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-25/2/06f7e2ea39daf7ef0778165b05f74742)

S. Weerts, Pass the Fruits and Vegetables, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A44, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.074.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-4V/2/45d4ac6d8f0734cc5a34047d6aaf6804)

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(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-66/2/3c75cbd34e5af25c14a1e0458d8f035d)

A.M. Villarubia, R. Ellis Gardner, G. Tuuri, R. Wood, Understanding Parents' Decisions About Serving Vegetables to Their Children, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A57, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.116.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-67/2/95c2b6b844b901b71e8679929b562bbf)

G. Napoleone, C. Conliffe, J.E. Hayes, K. Kneeland, B.S. Sullivan, V.B. Duffy, Modifying Vegetable Tastes to Improve Liking, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A76, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.195.
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P. Ohri-Vachaspati, Improving Fruits and Vegetable Intake Through a Community Foods Approach, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A85, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.217.

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L. Silverman, D.M. Holston, G. Tuuri, M. Solmon, M. Keenan, M. Zanovec, E. Murphy, Evaluating the Impact of the Smart Bodies School-Based Intervention Program to Increase Fruit and Vegetable Consumption in Elementary School Students, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A89, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.232.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-B5/2/ddd70bb5a0cf5274b67e5baac9d777bc)

P.D. Stanton, K. Garringer, M. Deferrari, Apples to Zucchini - A Pilot Program Addressing Access to Fresh Fruit and Vegetable Intake in Families that Participate in Berkshire South Women Infants and Children (WIC) Program, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A91, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.239.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-BD/2/42e3fd3f929528ee1b0e0680a010d486)

R.A. Richins, N. Christensen, M. Isrealsen, C. Albrect, C. Washburn, Development, Evaluation, and Efficacy of a Heart Healthy Curriculum in Two Different Education Settings; Emphasizing Food Portioning and Cooking Skills, Increased Fruits, Vegetables, Whole Grains, Low-Fat Dairy and Exercise, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A94, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.254.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-BY/2/0ab5aa3bbabbf38944cebb3f3d315c23)

L.J. Hughes, Improving Accessibility to Fresh Fruits and Vegetables in Low-Income Communities: The Youth Farmstand Experience, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A95, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.258.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-C3/2/98fe06cf2b3c23cc277949d3d46d9696)

R. Swanson, L. Lohr, M.L. McElveen, Motivational and Demographic Effects on Fruit and Vegetable Consumption Among College Students, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A101, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.280.
(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-CW/2/90dff1ebad77545166fbeb538ac66b89)

B.L. Marsh, R.B. Swanson, J.G. Fischer, J. Wade, M. Johnson, A Pilot Study With Older Women: Taste and Smell Status Effects on the Success of a Fruit and Vegetable Nutrition Education Program, Journal of the American Dietetic Association, Volume 107, Issue 8, Supplement 1, ADA FNCE 2007 Food & Nutrition Conference & Expo, ADA FNCE 2007 Food & Nutrition Conference & Expo, August 2007, Page A114, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.437.

(http://www.sciencedirect.com/science/article/B758G-4P8G9Y7-FP/2/5c05fe6d34e91984b17e4be9b657e0d4)

Nick Kalogeropoulos, Anastasia Mylona, Antonia Chiou, Maria S. Ioannou, Nikolaos K. Andrikopoulos, Retention and distribution of natural antioxidants ([alpha]-tocopherol, polyphenols and terpenic acids) after shallow frying of vegetables in virgin olive oil, LWT - Food Science and Technology, Volume 40, Issue 6, August 2007, Pages 1008-1017, ISSN 0023-6438, DOI: 10.1016/j.lwt.2006.07.003.
(http://www.sciencedirect.com/science/article/B6WMV-4KPFKY7-2/2/95334508ef44224ed0026c1b7f7227a4)
Abstract:
Potatoes, green peppers, zucchinis and eggplants were shallow fried in virgin olive oil (VOO) according to the Mediterranean traditional culinary practice. Zucchinis and eggplants were also blanketed with wheat flour or batter prior to frying. Polyphenols and hydroxy pentacyclic triterpene acids (HPTAs) were determined by GC/MS, while [alpha]-tocopherol was determined by high-performance liquid chromatography. Among 12 polyphenols determined, tyrosol predominated in frying oils and zucchini samples, while chlorogenic acid was the major phenolic species in the other vegetable samples. The triterpene acids maslinic, oleanolic and ursolic were determined in frying oils and fried vegetables, while [alpha]-tocopherol was present in all samples. Besides water loss and oil absorption, shallow frying resulted in partial loss of all the antioxidants studied in frying oils and enrichment of fried vegetables with olive oil antioxidants, which was in some extent affected by the type of vegetable fried and the culinary practice followed. The overall retention of the antioxidants in oil and food ranged from 32% to 64% for [alpha]-tocopherol, 25% to 70% for polyphenols and 35% to 83% for HPTA. It appears that vegetables fried in VOO provide an additional intake of [alpha]-tocopherol, terpenic acids and polyphenols as tyrosol and chlorogenic acid.
Keywords: Polyphenols; Terpenic acids; [alpha]-Tocopherol; Potato; Zucchini; Green pepper; Eggplant; Shallow frying (pan frying); Virgin olive oil

Wang Haiying, Zhang Shaozhi, Chen Guangming, Experimental study on the freezing characteristics of four kinds of vegetables, LWT - Food Science and Technology, Volume 40, Issue 6, August 2007, Pages 1112-1116, ISSN 0023-6438, DOI: 10.1016/j.lwt.2006.06.001.
(http://www.sciencedirect.com/science/article/B6WMV-4KJ0T0M-1/2/bbfaffcc810b041ee2c4c260d9df30d0)
Abstract:
Mushroom, green cauliflower, navy bean and pea pod are four kinds of favored vegetables. Their freezing characteristics are studied in this paper. For fresh samples, the moisture contents of mushroom, navy bean, pea pod and green cauliflower were 88.7+/-4.9, 92.9+/-0.4, 87.7+/-1.0 and 89.7+/-0.9 g/100 g, respectively. After pre-treating, cooling curve method and differential scanning calorimetry (DSC) were employed to measure the end-points of freezing and glass transition temperatures. The initial freezing points varied from -0.1 to -2.7 [degree sign]C. The end-points of freezing were all below -20.0 [degree sign]C. The partial glass transition temperatures varied from -50.3 to -76.1 [degree sign]C. With a cryomicroscope, the sizes of ice crystals in frozen vegetable saps were found to decrease from 26 to 3 [mu]m when the freezing rates increased from 1.0 to 10.0 [degree sign]C/min.
Keywords: Vegetable; Freezing characteristic; Ice crystal

Murray D. Drew, Ayoleke E. Ogunkoya, David M. Janz, Andrew G. Van Kessel, Dietary influence of replacing fish meal and oil with canola protein concentrate and vegetable oils on growth performance, fatty acid composition and organochlorine residues in rainbow trout (Oncorhynchus mykiss), Aquaculture, Volume 267, Issues 1-4, Nutrition and Feeding of Fish - This Special Issue

presents a small fraction of the presentations presented at the XII International Symposium on Fish Nutrition and Feeding held in Biarritz, France, May 28 to June 1, 2006., 3 July 2007, Pages 260-268, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2007.01.002.
(http://www.sciencedirect.com/science/article/B6T4D-4MT5JXC-1/2/bbce546e5a6670a498f45c225f945c68)
Abstract:
An experiment was performed to examine the effect of replacing fish meal and fish oil with canola protein concentrate and 65:35 mixture of canola and linseed oil on growth performance and carcass composition (fatty acids, polychlorinated dibenzodioxins and polychlorinated dibenzofurans (PCDD/F) and dioxin-like polychlorinated biphenyls (DL-PCB)) of rainbow trout. Thirty tanks of rainbow trout (n = 20/tank) were randomly assigned to one of 5 diets. The control diet contained 400 g kg- 1 fish meal and 200 g kg- 1 fish oil (FO/FM100) and the 4 experimental diets all contained 200 g kg- 1 of a 65:35 mixture of canola:linseed oil and 400 (VO/FM100), 200 (VO/FM50), 100(VO/FM25) or 0 (VO/FM0) g kg- 1 of fish meal replaced by canola protein concentrate on an equal digestible protein and energy basis. The experimental period was 140 days and fish weights and feed intakes were measured at 28 day intervals. At the end of the experiment, liver and fillet samples were collected from fish for the measurement of hepato-somatic indices and fillet composition, respectively. Fish fed the FO/FM100 or VO/FM100 diets had the highest weight gain over the 140 day experimental period (257.3 and 271.4 g); thus the replacement of fish oil with a mixture of canola and linseed oil did not adversely affect fish growth. However fish fed the VO/FM 50, VO/FM25 or VO/FM0 diets had significantly ($P < 0.05$) lower weight gain (228.3 and 202.2 g) than fish fed the VO/FM100 diet. Replacement of fish meal and fish oil with canola protein concentrate and canola:linseed oil mixture resulted in significant ($P < 0.05$) reduction of residual concentration of PCDD/F and DL-PCBs in fish diets and fillets but also reduced the level of 20:5n-3 and 22:6n-3 in the fish fillets. Replacement of fish oil and meal with vegetable oils and proteins can reduce the level of PCDD/F and DL-PCBs in farmed fish.
Keywords: Dioxins; Polychlorinated biphenyls; Linseed oil; Canola protein concentrate; Rainbow trout

Wendy Marcason, Can Cutaneous Application of Vegetable Oil Prevent an Essential Fatty Acid Deficiency?, Journal of the American Dietetic Association, Volume 107, Issue 7, July 2007, Page 1262, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.05.028.
(http://www.sciencedirect.com/science/article/B758G-4P2M748-1D/2/f1f53338a3c4e13cb3fe8cfc2f03aa40)

Antonio Ferrante, Tommaso Maggiore, Chlorophyll a fluorescence measurements to evaluate storage time and temperature of Valeriana leafy vegetables, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 73-80, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.02.003.
(http://www.sciencedirect.com/science/article/B6TBJ-4NB38C3-2/2/8e4b7b028fd7e398ce5e66eaeed5be94)
Abstract:
The quality of leafy vegetables has to be guaranteed for consumers for the whole postharvest period, usually limited to 5-7 days. The quality of vegetables during storage is difficult to determine. The aim of this work was to evaluate the quality status of leafy vegetables by means of chlorophyll a fluorescence measurements. Experiments were performed on Valeriana lettuce stored at 4 or 10 [degree sign]C for 15 days. The quality of the lettuce was evaluated by measuring anthocyanins, chlorophyll, carotenoids, phenols and chlorophyll a fluorescence. JIP analysis was performed at the intermediate points of the fluorescence induction curve. Results show that the higher storage temperature affected the lettuce leaf quality. Significant chlorophyll reduction was observed after only 5 days of storage in leaves stored at 10 [degree sign]C. Total

carotenoids significantly decreased after 8 days at both storage temperatures. Anthocyanins and total phenols did not change statistically during the entire experimental period. Fv/Fm and Fm measurements were able to be used to show changes that took place during the storage period, but were not to discriminate between the two storage temperatures. Among the calculated JIP indices, only PI, DIo/CS, ABS/DIo, ETo/DIo and RC/CSm were able to highlight differences during storage and between the two storage temperatures, and may be used as markers to evaluate the status of leaf during leafy vegetable storage. The highest value of R2 was found for ETo/DIo versus storage time.
Keywords: Anthocyanins; Chlorophyll; Carotenoids; Lamb's lettuce; Postharvest; Phenols; Storage

Wentao Xu, Wei Qu, Kunlun Huang, Feng Guo, Jiajia Yang, Heng Zhao, YunBo Luo, Antibacterial effect of Grapefruit Seed Extract on food-borne pathogens and its application in the preservation of minimally processed vegetables, Postharvest Biology and Technology, Volume 45, Issue 1, July 2007, Pages 126-133, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2006.11.019.
(http://www.sciencedirect.com/science/article/B6TBJ-4N74J04-1/2/213e012e602b0d44b71d301048983e2d)
Abstract:
The application of Grapefruit Seed Extract (GSE) as a sanitizer for reducing the populations of human bacterial pathogens on whole and fresh-cut green vegetables was investigated. Cucumber and lettuce were selected as model green vegetables, and six bacteria strains, including three strains of Salmonella spp. and three strains of Listeria monocytogenes, were selected in our study in order to determine the antibacterial effects of sanitizers. The survival and growth of total aerobes, Salmonella spp., and L. monocytogenes on whole and fresh-cut cucumber and lettuce during storage (10 and 4 [degree sign]C) were analyzed by using a classical microbiological enumeration. The antibacterial effects of GSE alone and GSE in combination with nisin and citric acid (Mixture agent II) were significant ($P < 0.05$). Treatments with sodium lactate and potassium sorbate (Mixture agent I) were also tested as chemically synthesized agents. Sensory quality was evaluated, and there was no significant difference between GSE and Mixture agent II treatments during storage in terms of organoleptic and visual properties. Our results suggest that GSE could inhibit bacteria significantly ($P < 0.05$) and prolong the preservation time; GSE might be applied as an effective and safe preservative for ready-to-eat cucumber and lettuce.
Keywords: Grapefruit Seed Extract; Salmonella; Listeria; Sensory quality; Cucumber; Lettuce

Ervin Balazs, Genetic Resources, Chromosome Engineering, And Crop Improvement: Vegetable Crops, Volume 3, Ram J. Singh (Ed.), Taylor and Francis Group, Boca Raton, London, New York, 6000 Broken Sound Parkway NW, Suite 300 Boca Raton FL 33487-2742, CRC Press, 2006. Recommended price $159.99. ISBN: 0-8493-9646-8, Hardcover, pp 352. Webmail: www.taylorandfrancis.com., South African Journal of Botany, Volume 73, Issue 3, July 2007, Page 478, ISSN 0254-6299, DOI: 10.1016/j.sajb.2007.04.053.
(http://www.sciencedirect.com/science/article/B7XN9-4NY4S0K-1S/2/7c578d379e5851e5dfe1a244b407d0a9)

D. Rico, A.B. Martin-Diana, J.M. Barat, C. Barry-Ryan, Extending and measuring the quality of fresh-cut fruit and vegetables: a review, Trends in Food Science & Technology, Volume 18, Issue 7, July 2007, Pages 373-386, ISSN 0924-2244, DOI: 10.1016/j.tifs.2007.03.011.
(http://www.sciencedirect.com/science/article/B6VHY-4NFR53T-2/2/6213a488cbe13a4e395cd1dedf68c183)
Abstract:
The market sales of ready-to-use fresh vegetables have grown rapidly in recent decades as a result of changes in consumer attitudes, especially consumption of fresh-cut lettuce and carrot due to their use in prepared salads. Chlorine solutions have been widely used to sanitise fruit and

vegetables in the fresh-cut industry. However, the association of chlorine with the possible formation of carcinogenic chlorinated compounds in water has called into question the use of chlorine in food processing. There is a real need to find alternatives for preservation of fresh-cut fruit and vegetables in order to improve the efficacy of washing treatments. Alternatives or modified methods have been proposed, as antioxidants, irradiation, ozone, organics acids, modified atmosphere packaging, whey permeate, etc.; however, none have yet gained widespread acceptance by the industry. For this reason the development of alternatives and markers in order to measure the efficacy of these alternatives are needed.

Eric Dubois, Catherine Hennechart, Ghislaine Merle, Christian Burger, Nadia Hmila, Stephanie Ruelle, Sylvie Perelle, Virginie Ferre, Detection and quantification by real-time RT-PCR of hepatitis A virus from inoculated tap waters, salad vegetables, and soft fruits: Characterization of the method performances, International Journal of Food Microbiology, Volume 117, Issue 2, 30 June 2007, Pages 141-149, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.02.026.
(http://www.sciencedirect.com/science/article/B6T7K-4NCJCGX-3/2/2647af5957d26a2a3f301143240fc779)
Keywords: Real-time PCR; Enteric virus; Hepatitis A; Food; Water; Validation

Hyun-Ju Eom, Dong Mi Seo, Nam Soo Han, Selection of psychrotrophic Leuconostoc spp. producing highly active dextransucrase from lactate fermented vegetables, International Journal of Food Microbiology, Volume 117, Issue 1, 10 June 2007, Pages 61-67, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.02.027.
(http://www.sciencedirect.com/science/article/B6T7K-4NCSGH0-1/2/cadd248d044d7c61df51a603a553a1f9)
Abstract:
Leuconostoc is the major bacterial genus in the initial phase of the lactate fermentation of vegetables. The dextransucrase elaborated from this bacterium is used to synthesize dextran polymers or prebiotic oligosaccharides. To use Leuconostoc as a starter culture in the manufacture of the kimchi-like fermented foods at low temperature, we isolated microbial flora that showed fast growth rates and high enzyme activity under the test conditions. Nine hundred colonies of Leuconostoc were collected from kimchi, sauerkraut, and pickled cucumber using three consecutive selection media; after batch culture and enzyme activity assays, four strains were selected. Sequencing of 16S rRNA genes of the strains revealed that HJ-S7 and HJ-S13 were Leuconostoc (Ln.) mesenteroides and HJ-P4 and HJ-P5 were Ln. citreum. When compared to the type strain, Ln. mesenteroides B-512F, HJ-P4 showed a more than twofold faster growth rate and 20-fold higher enzyme activity during cultivation at 8 [degree sign]C. These strains are suitable as oligosaccharide-synthesizing starters for the fermentation of not only kimchi but also sauerkraut and pickled cucumbers.
Keywords: Dextransucrase; Kimchi; Leuconostoc; Oligosaccharides; Panose; Pickle; Psychrotroph; Sauerkraut

Lay Ching Chai, Tunung Robin, Usha Menon Ragavan, Jurin Wolmon Gunsalam, Fatimah Abu Bakar, Farinazleen Mohamad Ghazali, Son Radu, Malakar Pradeep Kumar, Thermophilic Campylobacter spp. in salad vegetables in Malaysia, International Journal of Food Microbiology, Volume 117, Issue 1, 10 June 2007, Pages 106-111, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2007.02.014.
(http://www.sciencedirect.com/science/article/B6T7K-4N6FFGH-5/2/77b6ef26086f2093fc9da8458fc81fca)
Abstract:
The main aim of this study was to combine the techniques of most probable number (MPN) and polymerase chain reaction (PCR) for quantifying the prevalence and numbers of Campylobacter

spp. in ulam, a popular Malaysian salad dish, from a traditional wet market and two modern supermarkets in Selangor, Malaysia. A total of 309 samples of raw vegetables which are used in ulam were examined in the study. The prevalences of campylobacters in raw vegetables were, for supermarket I, Campylobacter spp., 51.9%; Campylobacter jejuni, 40.7%; and Campylobacter coli, 35.2%: for supermarket II, Campylobacter spp., 67.7%; C. jejuni, 67.7%; and C. coli, 65.7%: and for the wet market, Campylobacter spp., 29.4%; C. jejuni, 25.5%; and C. coli, 22.6%. In addition Campylobacter fetus was detected in 1.9% of raw vegetables from supermarket I. The maximum numbers of Campylobacter spp. in raw vegetables from supermarkets and the wet market were > 2400 and 460 MPN/g, respectively.
Keywords: Campylobacter; Salad vegetables; Retail outlets

Mehmet Bozoglu, Vedat Ceyhan, Measuring the technical efficiency and exploring the inefficiency determinants of vegetable farms in Samsun province, Turkey, Agricultural Systems, Volume 94, Issue 3, Special Section: sustainable resource management and policy options for rice ecosystems, International symposium on sustainable resource management and policy options for rice ecosystems, June 2007, Pages 649-656, ISSN 0308-521X, DOI: 10.1016/j.agsy.2007.01.007.
(http://www.sciencedirect.com/science/article/B6T3W-4NF2HRF-1/2/6461e5901aa590798b7fce7f635c7148)
Abstract:
The purposes of this research were to measure the technical efficiency of sample vegetable farms and subsequently to explore determinants of technical inefficiency in the Samsun province of Turkey. Stochastic Frontier Analysis was used to measure technical efficiency. Farm managers from 75 randomly selected farms were interviewed for farm level data in the 2002-2003 production periods. Research results revealed that the average output of vegetable farms in Samsun could increase by 18% under prevailing technology. The technical efficiency of the sample vegetable farms ranged from 0.56 to 0.95 (0.82 average). The variables of schooling, experience, credit use, participation by women and information score negatively affected technical inefficiency. However, age, family size, off-farm income and farm size showed a positive relationship with inefficiency. Therefore, this study proposes strategies such as providing better extension services and farmer training programs, integrating women into the training and extension programs, raising the educational level of farmers, and providing farmers with greater access to credit, to enhance technical efficiency.
Keywords: Vegetable farming; Female labor; Stochastic production frontier; Technical efficiency; Determinants of inefficiency

Rashmi Srivastava, David Roseti, A.K. Sharma, The evaluation of microbial diversity in a vegetable based cropping system under organic farming practices, Applied Soil Ecology, Volume 36, Issues 2-3, June 2007, Pages 116-123, ISSN 0929-1393, DOI: 10.1016/j.apsoil.2007.01.008.
(http://www.sciencedirect.com/science/article/B6T4B-4N977G2-1/2/5d2063f25db1024b2b4c38225de928ff)
Abstract:
Organic farming is becoming a major tool for sustaining the soil quality degraded by intensive use of synthetic chemicals for increasing crop production and therefore, use of bio-agents as biofertilizers or biopesticides is an integral part of organic farming especially in vegetable cultivation. An effort was, therefore, made to see the effect of arbuscular mycorrhizal fungi (AMF) and pseudomonads as the microbial inoculants in vegetable based cropping systems under organic farming practices. Three crops taken in rotation were okra, pea and cowpea in a year. The inoculants used were Glomus intraradices, an arbuscular mycorrhizal fungus, and four isolates of Pseudomonas fluorescens singly and in combinations. No chemical/organic fertilizer was added during two rotations of chosen vegetables except the crop residues, which was chopped and distributed equally onto the each plot after the harvest of the fruits. A significant increase in yield

was observed in the inoculated plots over the control. Culturable microbial diversity was increased compared with the start of the experiment. Total microbial diversity as assessed by Denaturing Gradient Gel Electrophoresis confirmed the results of culturable total and functional diversity analysed using Shannon Weaver's diversity indices (H'). Functional diversity assessed in terms of cellulase, xylanase, amylase, protease producers and P-solubilizers showed that the inoculants worked beneficially for maintaining soil health. The mycorrhizal inoculation followed by combination of AMF and pseudomonads proved to be better. Present findings indicated that microbial gene pool especially the key helpers for the maintenance of soil health residing in the vicinity of roots, was positively affected by using pseudomonads and AMF. Under organic farming management practices, inoculated bioagents and crop residues increased the yield of vegetables.
Keywords: Microbial diversity; Vegetable; Organic farming; Arbuscular mycorrhizal fungi; Pseudomonas fluorescens; Soil enzymes; Denaturing gradient gel electrophoresis

Mehmet Karapinar, Ilkin Yucel Sengun, Antimicrobial effect of koruk (unripe grape--Vitis vinifera) juice against Salmonella typhimurium on salad vegetables, Food Control, Volume 18, Issue 6, June 2007, Pages 702-706, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2006.03.004.
(http://www.sciencedirect.com/science/article/B6T6S-4JT8374-4/2/a2cb5029871f65cf2449c56f678e1ad5)
Abstract:
To evaluate the antimicrobial activity of koruk (unripe grape--Vitis vinifera) juice, cucumber and parsley samples were inoculated with two Salmonella typhimurium strains namely S. typhimurium NRRL-B-4420 and S. typhimurium CCM 583 at the level of approximately 106 cfu/ml. The samples were treated with koruk juices produced by different methods (by using mortar and electrical blender) for 0, 15, 30 and 60 min. Salmonella cells were counted by using direct surface plating (on Tryptone Soya Agar, Bismuth Sulphite Agar or Xylose Desoxylate Agar with 50 ppm nalidixic acid; TSAN, BSAN or XLDN) and overlay plating (on TSAN/BSAN) methods. Counts on TSAN/BSAN or TSAN, BSAN and XLDAN were not significantly different ($P > 0.05$). So, further experiments were done with direct surface plating on TSAN and BSAN. Overall statistical analysis indicated that, the antimicrobial effect of koruk juice was found to be dependent on the culture strains and products used ($P < 0.05$). Koruk juice exerted an immediate antimicrobial effect contact with the test microorganisms causing 1-1.5 log cfu/g reductions in initial populations. However, cell reductions in samples exposed to koruk juice for 15, 30 and 60 min varied between 2 and 3.5 log cfu/g depending on the microorganism and test sample used. There was no significant difference in cell reduction in samples exposed to koruk juices for 15, 30 and 60 min ($P > 0.05$) whereas reduction obtained at 0 time differed significantly ($P < 0.05$). On the other hand, no significant differences were found between the antimicrobial effects of koruk juices prepared by different methods. Results of the study showed that koruk juice used as flavouring and acidifying agent in Turkish kitchens, may be considered to be an alternative potential antimicrobial agent at household level for salad vegetables.
Keywords: Salmonella typhimurium; Koruk juice; Salad vegetables

Clifton Gray, Leslie A. Lytle, Cheryl Perry, Mary Story, Gretchen Taylor, Donald Bishop, Fruits and Vegetables Taken Can Serve as a Proxy Measure for Amounts Eaten in a School Lunch, Journal of the American Dietetic Association, Volume 107, Issue 6, June 2007, Pages 1019-1023, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.03.001.
(http://www.sciencedirect.com/science/article/B758G-4NT2RT8-W/2/4c9eda4ed81de66b591bded512a232db)
Abstract:
This study tests the hypothesis that fruits and vegetables taken on students' lunch trays are usable proxies for fruits and vegetables eaten, and that the proxy is useful with children in the youngest school grade (ie, grade 1; ages 6 to 8 years). A total of 1,168 randomly selected students in grade

1 and grade 3 (ages 8 to 10 years) in 26 schools in the Twin Cities, MN, metropolitan area were observed before and after an intervention that was applied to 13 randomly selected schools. Trained observers recorded food quantities on a child's tray and measured food consumed during the meal. Correlations between amounts of fruits and vegetables taken and eaten ranged from 0.74 to 0.96. The median correlation in grade 1 was the same, 0.82, as in the combined sample. Food taken and food eaten as alternative response variables resulted in the same conclusions about the effects of intervention. The hypothesis is strengthened that food taken can be used as a proxy for consumption in future nutrition education research.

P. Ragaert, F. Devlieghere, J. Debevere, Role of microbiological and physiological spoilage mechanisms during storage of minimally processed vegetables, Postharvest Biology and Technology, Volume 44, Issue 3, June 2007, Pages 185-194, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2007.01.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4N0XNDS-1/2/a8dc3441e5d588a88390eaed9300a432)
Abstract:
Minimally processed vegetables (MPV) are economically important commodities due to a combination of factors such as convenience, healthiness and desirable sensory characteristics. These commodities are susceptible to microbiological invasion due to the presence of cut surfaces causing both microbiological and physiological mechanisms to be possible limitations for the sensory shelf life. This review evaluates the role of microbiological activity in the development and changes of different sensory quality factors (visual, flavour, and textural quality) of minimally processed vegetables and evaluates the possible interaction with physiological mechanisms, taking into account important preservation techniques such as storage temperature and atmospheric conditions.
Keywords: Microbiology; Physiology; Sensory quality; Degradation

R.B. Thompson, C. Martinez-Gaitan, M. Gallardo, C. Gimenez, M.D. Fernandez, Identification of irrigation and N management practices that contribute to nitrate leaching loss from an intensive vegetable production system by use of a comprehensive survey, Agricultural Water Management, Volume 89, Issue 3, 10 May 2007, Pages 261-274, ISSN 0378-3774, DOI: 10.1016/j.agwat.2007.01.013.
(http://www.sciencedirect.com/science/article/B6T3X-4N7RD65-2/2/9e14668b8bdb1dfa69bfde2294d668a0)
Abstract:
Considerable NO3- contamination of underlying aquifers is associated with greenhouse-based vegetable production in south-eastern Spain, where 80% of cropping occurs in soil. To identify management factors likely to contribute to NO3- leaching from soil-based cropping, a survey of irrigation and N management practices was conducted in 53 commercial greenhouses. For each greenhouse: (i) a questionnaire of general irrigation and N management practices was completed, (ii) amounts of N applied in manure were estimated; and for one crop in each greenhouse: (a) irrigation volume was compared with ETc calculated using a mathematical model and (b) total amount of applied fertiliser N was compared with crop N uptake. Total irrigation during the first 6 weeks after transplanting/sowing was generally excessive, being >150 and >200% of modelled ETc in, respectively, 68 and 60% of greenhouses. During the subsequent period, applied irrigation was generally similar to modelled ETc, with only 12% of greenhouses applying >150% of modelled ETc. Large irrigations prior to transplanting/sowing were applied in 92% of greenhouses to leach salts and moisten soil. Volumes applied were >20 and >40 mm in, respectively, 69 and 42% of greenhouses. Chemical soil disinfectants had been recently applied in 43% of greenhouses; associated irrigation volumes were >20 and >40 mm in, respectively, 78 and 48% of greenhouses conducting disinfection. Nitrogen and irrigation management were generally based on experience,

with very little use of soil or plant analysis. Large manure applications were made at greenhouse construction in 98% of greenhouse, average manure and N application rates were, respectively, 432 m3 ha-1 and 3046 kg N ha-1. Periodic manure applications were made in 68% of greenhouses, average application rates for farmyard and pelleted manures were, respectively, 157 and 13 m3 ha-1 (in 55 and 13% of greenhouses); the average N rate was 947 kg N ha-1. Manure N was not considered in N fertiliser programs in 74% of greenhouses. On average, 75% of fertiliser N was applied as NO3-. Applied fertiliser N was >1.5 and >2 times crop N uptake in, respectively, 42 and 21% of crops surveyed. The survey identified various management practices likely to contribute to NO3- leaching loss. Large manure applications and experiential mineral N management practices, based on NO3- application, are likely to cause accumulation of soil NO3-. Drainage associated with: (i) the combined effect of large irrigations immediately prior to and excessive irrigations for several weeks following transplanting/sowing and (ii) large irrigations for salt leaching and soil disinfection, is likely to leach accumulated NO3- from the root zone. This study demonstrated that surveys can be very useful diagnostic tools for identifying crop management practices, on commercial farms, that are likely to contribute to appreciable NO3- leaching.
Keywords: Greenhouse; Almeria; Horticulture; Nitrate; Contamination; Aquifer

Dominic A. Nanton, Anne Vegusdal, Anna Maria Bencze Rora, Bente Ruyter, Grete Baeverfjord, Bente E. Torstensen, Muscle lipid storage pattern, composition, and adipocyte distribution in different parts of Atlantic salmon (Salmo salar) fed fish oil and vegetable oil, Aquaculture, Volume 265, Issues 1-4, 1 May 2007, Pages 230-243, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2006.03.053.
(http://www.sciencedirect.com/science/article/B6T4D-4MYMFRN-4/2/4d052b8ee1664670fc0efd0d4c5b840f)
Abstract:
The effects of dietary oil source on lipid storage were evaluated in harvest size Atlantic salmon fed fish (FO) or vegetable oil (VO) based diets from start-feeding. Final weight and fat content were not significantly different for salmon fed FO and VO diets over a 27 month period. Fish fed these diets were scanned by computerized X-ray tomography (CT) and the whole body scans partitioned into two equal sections according to distance in longitudinal direction. Visible depot fat (area % of soft tissues) and mixed tissue fat levels were significantly higher in the anterior compared to posterior sections, but longitudinal fat distribution was not affected by diet. Differences in the fatty acid (FA) composition of the FO and VO diets were reflected in the tissues (white muscle, red muscle, white muscle myosepta, belly flap and visceral fat) of Atlantic salmon fed these diets. Lipid levels in these tissues were not significantly different for salmon fed FO and VO diets. No obvious differences were observed histologically in the lipid storage patterns of these tissues for salmon fed FO and VO diets. Visceral fat and belly flap tissues were predominated by adipocytes and contained the highest levels of total lipid and triacylglycerol (TAG) per g wet weight for the tissues tested. The red muscle contained higher lipid levels than the white muscle (> 4 fold for salmon fed the same FO or VO diet). Intracellular lipid droplets were observed by light microscopy in oil red O stained frozen sections of the red muscle but not observed to any extent in the white muscle (dorsal, lateral and ventral) for salmon fed FO and VO diets. Observations at higher magnifications, however, revealed small lipid droplets located in close association with mitochondria in the cytoplasm of white muscle cells. High densities of adipocytes were observed in the myosepta of red and white muscle for salmon fed FO and VO diets. White muscle myosepta had a significantly higher total lipid content and proportion of TAG than the white muscle. The belly flap, myosepta and visceral fat, (adipocyte-rich, lipid storage tissues) contained a higher proportion of TAG and monounsaturated FA as well as a lower proportion of polar lipid and n-3 polyunsaturated FA compared to the muscle tissues.
Keywords: Atlantic salmon; Lipid storage; Fish oil; Vegetable oil; Fatty acid; Lipid class; Histology

Martin Erlandson, Sarah Newhouse, Keith Moore, Alida Janmaat, Judy Myers, David Theilmann, Characterization of baculovirus isolates from Trichoplusia ni populations from vegetable greenhouses, Biological Control, Volume 41, Issue 2, May 2007, Pages 256-263, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2007.01.011.
(http://www.sciencedirect.com/science/article/B6WBP-4MYD64N-1/2/db9c8d5bcfa9616679e11f7ecfc71dd0)
Abstract:
A survey of cabbage looper, Trichoplusia ni, populations in greenhouse vegetable crops in the Fraser Valley (FV) of British Columbia, Canada led to the isolation of a large number of Nucleopolyhedrovirus (NPV) single-infected-larva isolates. These NPVs were identified from cadavers by phase-contrast light microscopy and characterized as either T. ni SNPV (TnSNPV) or Autographa californica MNPV (AcMNPV) by mulitplex-PCR. Among the 57 NPV isolates collected in 2000, 54 were TnSNPV and three, all from one greenhouse, were AcMNPV. In 2001 over 100 single-infected-cadaver NPV isolates were characterized by PCR and all were TnSNPV. Restriction endonuclease (REN) analysis confirmed the PCR identification of individual isolates. In addition, REN analysis showed that all TnSNPV isolates had identical REN profiles that were similar to but distinct from the reference strain TnSNPV-RJ suggesting that TnSNPV-FV isolates constitute a single unique strain of the virus. In contrast, only a few AcMNPV were isolated and these constitute two strains based on REN profiles that were distinct from other AcMNPV strains. Dose-response bioassays with 2nd and 4th instar T. ni indicated there was no significant difference in infectivity of TnSNPV and AcMNPV isolates. However, in 5th instar T. ni AcMNPV was as much as 10-fold more infectious than TnSNPV. In addition, AcMNPV appeared to be more virulent as infected 4th instar larvae died approximately 18 h sooner than TnSNPV infected larvae. TnSNPV produced approximately five times more occlusion bodies per cadaver than AcMNPV. Both AcMNPV and TnSNPV appear to have good potential as candidates for biological control agents of T. ni.
Keywords: Cabbage looper; Trichoplusia ni; Nucleopolyhedrovirus; AcMNPV; TnSNPV

Jiguo Wu, Tiangang Luan, Chongyu Lan, Thomas Wai Hung Lo, Gilbert Yuk Sing Chan, Removal of residual pesticides on vegetable using ozonated water, Food Control, Volume 18, Issue 5, May 2007, Pages 466-472, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2005.12.011.
(http://www.sciencedirect.com/science/article/B6T6S-4JCBKM4-3/2/56f2ea7b0d75ededa0234679dee95230)
Abstract:
Degradation of the four pesticides by dissolved ozone was investigated in order to establish the effect of operational parameters: methyl-parathion, parathion, diazinon and cypermethrin. They were commonly used as broad-spectrum insecticides in pest control, and high residual levels had been detected in vegetables. In the present study, the effectiveness in pesticide oxidation in aqueous solution using low level of dissolved ozone was determined using solid-phase micro-extraction (SPME) and GC-MS. Dissolved ozone (1.4 mg/l) was effective to oxidize 60-99% of methyl-parathion, cypermethrin, parathion and diazinon in aqueous solution in 30 min and the degradation was mostly completed in the first 5 min. Trace amounts and unstable paraoxon and diazoxon were tentatively identified as primary ozonation byproducts of parathion and diazinon. The feasibilities of using low level of dissolved ozone (1.4-2.0 mg/l) for removal of the four pesticides residue on vegetable surface (Brassica rapa) were also tested. Ozone was mostly effective in cypermethrin removal (>60%). The removal efficiency of pesticides highly depended on the dissolved ozone levels and temperature. The present study validated that ozonation is a safe and promising process for the removal of the tested pesticides from aqueous solution and vegetable surface under domestic conditions.
Keywords: Ozonated water; Pesticides; Vegetable

Pirjo Mattila, Jarkko Hellstrom, Phenolic acids in potatoes, vegetables, and some of their products, Journal of Food Composition and Analysis, Volume 20, Issues 3-4, The essential balance: Risks and benefits in food safety and quality, May 2007, Pages 152-160, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.05.007.
(http://www.sciencedirect.com/science/article/B6WJH-4KTVTPJ-3/2/8706ad6e335f38edb9e74bb5ce18b3ab)
Abstract:
The aim of this study was to determine the distribution and contents of soluble and total phenolic acids in a wide range of vegetables consumed in Finland. The determinations were performed from the pooled samples (14 potato and 45 other vegetable samples). Soluble phenolic acids were extracted with methanolic acetic acid and a tentative quantification was performed by HPLC. The contents of total phenolic acids were determined by HPLC after alkaline and acid hydrolyses. Chlorogenic acid derivatives were the most dominant soluble phenolic acids, while caffeic acid was the most dominant phenolic acid aglycone in the samples studied. Highest contents of soluble phenolic acids were found in raw and cooked potato peels: 23-45 mg/100 g fresh weight calculated as aglycones. In addition, pot-grown lettuces, Chinese cabbage, broccoli, carrot, aubergine, Jerusalem artichoke, peanut and most of the boiled and peeled potato tubers contained more than 5 mg/100 g of soluble phenolic acids calculated as aglycones. Among the best vegetable sources of total phenolic acids were potatoes, with contents varying from 7.9 mg/100 g (cooked and peeled Rosamunda variety) to 52 mg/100 g (cooked peel of Van Gogh variety), and red cabbage, carrot, aubergine, Jerusalem artichoke, broccoli, pot-grown lettuce, spinach, radish and red beet, with contents from 11 mg/100 g (spinach) to 52 mg/100 g (pot-grown lettuce Lollo Rosso). Variation in the phenolic acid contents of the vegetables was either moderate or considerable and needs further research.
Keywords: Phenolic acids; Vegetables; Potatoes; Nutrients and anti-nutrients

Taotao Wang, Hanxia Li, Yongen Lu, Junhong Zhang, Zhibiao Ye, Identification and distribution of S haplotypes in Brassica vegetables from China, Scientia Horticulturae, Volume 112, Issue 3, 23 April 2007, Pages 271-277, ISSN 0304-4238, DOI: 10.1016/j.scienta.2007.01.012.
(http://www.sciencedirect.com/science/article/B6TC3-4N5KY56-2/2/53ef6d8e4eb880310553e97938fb2a3f)
Abstract:
The amplification efficiency and identification diversity with gene-specific primers derived from S locus glycoprotein gene (SLG) and S locus receptor kinase gene (SRK) were compared, and the geographical distribution for S haplotypes was investigated by polymerase chain reaction restriction fragment length polymorphism (PCR-RFLP) in 72 genotypes of 5 Brassica vegetables from China. The amplification efficiency and identification diversity with class I SRK primers were generally higher than that with class I SLG in most crops tested. Class I alleles were found in total 66 genotypes and they were classified into 16, 10, 7 and 10 groups for Chinese cabbage, purple flowering stalk, cauliflower and cabbage respectively. The number of amplification accessions and identification diversity using the primers of class II SLG and SRK were quite similar. Class II alleles were detected in 55 genotypes and further grouped into one type in mustard and three in other crops. The nucleotide sequences showed high similarity between identical S haplotypes determined by reciprocal pollination and PCR-RFLP tests. It demonstrated that the PCR-RFLP analysis was feasible for identification of S alleles, and SRK should be considered as a better marker for the identification of S haplotypes than SLG. The types of S haplotypes are highly diverse in Brassica vegetables from China. Nevertheless, they were geographically limited in some Brassica vegetables, so the exchange of germplasm resources should be enhanced for breeding.
Keywords: Brassica vegetable; Self-incompatibility; S haplotype; SLG; SRK; Identification; Distribution

Mukesh Kumar Modi, J.R.C. Reddy, B.V.S.K. Rao, R.B.N. Prasad, Lipase-mediated conversion of vegetable oils into biodiesel using ethyl acetate as acyl acceptor, Bioresource Technology, Volume 98, Issue 6, April 2007, Pages 1260-1264, ISSN 0960-8524, DOI: 10.1016/j.biortech.2006.05.006.
(http://www.sciencedirect.com/science/article/B6V24-4KBDWF6-3/2/13135205ffb05f4c6ff8804027fd71b8)
Abstract:
Ethyl acetate was explored as an acyl acceptor for immobilized lipase-catalyzed preparation of biodiesel from the crude oils of Jatropha curcas (jatropha), Pongamia pinnata (karanj) and Helianthus annuus (sunflower). The optimum reaction conditions for interesterification of the oils with ethyl acetate were 10% of Novozym-435 (immobilized Candida antarctica lipase B) based on oil weight, ethyl acetate to oil molar ratio of 11:1 and the reaction period of 12 h at 50 [degree sign]C. The maximum yield of ethyl esters was 91.3%, 90% and 92.7% with crude jatropha, karanj and sunflower oils, respectively under the above optimum conditions. Reusability of the lipase over repeated cycles in interesterification and ethanolysis was also investigated under standard reaction conditions. The relative activity of lipase could be well maintained over twelve repeated cycles with ethyl acetate while it reached to zero by 6th cycle when ethanol was used as an acyl acceptor.
Keywords: Biodiesel; Candida antarctica; Ethanol; Ethyl acetate; Interesterification; Lipase

V. Nallathambi Gunaseelan, Regression models of ultimate methane yields of fruits and vegetable solid wastes, sorghum and napiergrass on chemical composition, Bioresource Technology, Volume 98, Issue 6, April 2007, Pages 1270-1277, ISSN 0960-8524, DOI: 10.1016/j.biortech.2006.05.014.
(http://www.sciencedirect.com/science/article/B6V24-4KCRS9F-3/2/b2d03790bc8399d83b879d7b244af490)
Abstract:
Several fractions of fruits and vegetable solid wastes (FVSW), sorghum and napiergrass were analyzed for total solids (TS), volatile solids (VS), total organic carbon, total kjeldahl nitrogen, total soluble carbohydrate, extractable protein, acid-detergent fiber (ADF), lignin, cellulose and ash contents. Their ultimate methane yields (Bo) were determined using the biochemical methane potential (BMP) assay. A series of simple and multiple regression models relating the Bo to the various substrate constituents were generated and evaluated using computer statistical software, Statistical Package for Social Sciences (SPSS). The results of simple regression analyses revealed that, only weak relationship existed between the individual components such as carbohydrate, protein, ADF, lignin and cellulose versus Bo. A regression of Bo versus combination of two variables as a single independent variable such as carbohydrate/ADF and carbohydrate + protein/ADF also showed that the relationship is not strong. Thus it does not appear possible to relate the Bo of FVSW, sorghum and napiergrass with single compositional characteristics. The results of multiple regression analyses showed promise and the relationship appeared to be good. When ADF and lignin/ADF were used as independent variables, the percentage of variation accounted for by the model is low for FVSW (r2 = 0.665) and sorghum and napiergrass (r2 = 0.746). Addition of nitrogen, ash and total soluble carbohydrate data to the model had a significantly higher effect on prediction of Bo of these wastes with the r2 values ranging from 0.9 to 0.99. More than 90% of variation in Bo of FVSW could be accounted for by the models when the variables carbohydrate, lignin, lignin/ADF, nitrogen and ash (r2 = 0.904), carbohydrate, ADF, lignin/ADF, nitrogen and ash (r2 = 0.90) and carbohydrate/ADF, lignin/ADF, lignin and ash (r2 = 0.901) were used. All the models have low standard error values, which indicate the amount of spread is less. Thus, considering only the higher r2 values, six models are proposed for predicting the Bo based on FVSW data and sorghum and napiergrass data. It would be more convenient if Bo could be predicted by analyzing the chemical composition of the substrate rather than

performing the long-term batch fermentation. To test the validity of the regression models, chemical constituents of FVSW that were not included in the regression analyses were determined and their experimental Bo were determined by BMP assay. All the six models were used to predict the Bo from the chemical constituents of these FVSW. It was found that most of the predicted values were within 20% of the experimental Bo in models 1, 3 and 6. Since models 3 and 6 used the same variables namely, total soluble carbohydrate, ADF, lignin/ADF, nitrogen and ash, Bo can be predicted from these five chemical constituents which accounts for more than 90% of the variation in Bo (r2 > 90).
Keywords: Fruit wastes; Vegetable wastes; Sorghum; Napiergrass; Standard biomass; Biochemical methane potential assay; Multiple regression models; Ultimate methane yield; Predicting Bo

J.G. Wu, T.G. Luan, C.Y. Lan, W.H. Lo, G.Y.S. Chan, Efficacy evaluation of low-concentration of ozonated water in removal of residual diazinon, parathion, methyl-parathion and cypermethrin on vegetable, Journal of Food Engineering, Volume 79, Issue 3, April 2007, Pages 803-809, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.02.044.
(http://www.sciencedirect.com/science/article/B6T8J-4JS2058-2/2/05bfb77ea58a7acd65577db56b272a69)
Abstract:
The present study investigated the degradation of four pesticides by low-concentration of dissolved ozone in order to establish the effect of operational parameters. The results indicated that dissolved ozone (initial concentration of 1.4 mg/l) was effective to oxidize 60-99% of 0.1 mg/l aqueous diazinon, parathion, methyl-parathion and cypermethrin shortly within 30 min. The feasibilities of applying low dissolved levels of ozone in water (1.4-2.0 mg/l) to remove the target pesticides residing on vegetable surface (Brassica rapa) were studied. Ozonated water was mostly effective in cypermethrin removal (>60%). The efficacy highly depended on the dissolved ozone levels. Higher temperature enhanced the efficacy in pesticide removal; however, the solubility of ozone in water is inversely proportional to temperature. The maximal efficacy for diazinon removal was detected to be at 15-20 [degree sign]C. Major limitation factors for residual pesticide removal are temperature, concentration of ozone gas applied and concentration of dissolved ozone established.
Keywords: Pesticide; Ozonated water; Vegetable; Diazinon; Parathion; Methyl-parathion; Cypermethrin

A. Derossi, T. De Pilli, C. Severini, Prediction of water activity in vegetable creams: Note 2, Journal of Food Engineering, Volume 79, Issue 4, April 2007, Pages 1280-1286, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2006.04.049.
(http://www.sciencedirect.com/science/article/B6T8J-4KCXJ5J-1/2/fb39296fd21b7939008ea16b81902ac3)
Abstract:
Results were reported in note 1 on a simple empirical mathematical model for predicting water activity values (aw) in aqueous solutions for extract of mushroom and mushroom creams. In this paper we verified the equation obtained in note 1 on a different raw material (apple creams). Moreover, on the basis of the same method used in the first part of this work a new mathematical model to forecast aw values using two different humectants was proposed. Results showed a high accuracy for the proposed equation. In fact, the correlation coefficients were always greater than 0.994 and the p-levels < 0.001.
Keywords: Water activity; Mathematical model; Vegetable creams

Alison Gustafson, David Cavallo, Amy Paxton, Linking Homegrown and Locally Produced Fruits and Vegetables to Improving Access and Intake in Communities through Policy and Environmental

Change, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 584-585, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.02.023.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-J/2/b1cea57c0764809766d47a0e5c4b30b7)

Cynthia A. Thomson, Tara R. Newton, Ellen J. Graver, Kelly A. Jackson, Phyllis M. Reid, Vernon L. Hartz, Ellen C. Cussler, Iman A. Hakim, Cruciferous Vegetable Intake Questionnaire Improves Cruciferous Vegetable Intake Estimates, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 631-643, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.01.016.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-T/2/bd25102365e08bce01849f77be720c7d)
Abstract: Objective
To develop a validated, focused Cruciferous Vegetable Food Frequency Questionnaire (FFQ) as an assessment tool for specific quantification of dietary cruciferous vegetable exposure.Design/Methods
Participants (n=107; 18 to 76 years old) completed a standard FFQ and the Cruciferous Vegetable FFQ twice over a 2-week period. Repeat dietary recalls were collected on 3 days over the same 2-week period. Urinary dithiocarbamate was determined as a biomarker of cruciferous vegetable intake.Statistical Analyses
Descriptive statistics of intake; paired t tests and sign tests for comparison of intake estimates between instruments; Spearman correlations to assess reliability and associations between diet instruments and urinary dithiocarbamate.Results
Cruciferous vegetable intake was significantly correlated between the two FFQs (rs=0.58), although the Cruciferous Vegetable FFQ estimated intake 35 g higher than the standard FFQ. The Cruciferous Vegetable FFQ was reliable, with a repeated measures correlation of 0.69 ($P<=0.01$). Urinary dithiocarbamate excretion correlated with cruciferous vegetable intake from the Cruciferous Vegetable FFQ (rs=0.26, $P<0.01$), and from the standard FFQ (rs=0.19, $P=0.06$).Conclusions
The Cruciferous Vegetable FFQ provided a reproducible, valid estimate of cruciferous vegetable exposure and improved the relationship between crucifer consumption and urinary dithiocarbamate, a biomarker of cruciferous vegetable exposure. The nearly twofold difference in exposure estimates between the Cruciferous Vegetable FFQ and the standard FFQ could change the statistical significance of risk estimates in the context of epidemiological research. This questionnaire is an appropriate research tool to evaluate cruciferous vegetable intake more accurately than a standard FFQ, particularly in the context of dietary intervention studies that promote increased vegetable intake to reduce the risk for chronic disease.

Adam M. Bernstein, Leo Treyzon, Zhaoping Li, Are High-Protein, Vegetable-Based Diets Safe for Kidney Function? A Review of the Literature, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 644-650, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.01.002.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-V/2/516431f49c8b97f48bc4a334f4383c96)
Abstract:
In individuals with chronic kidney disease, high-protein diets have been shown to accelerate renal deterioration, whereas low-protein diets increase the risk of protein malnutrition. Vegetarian diets have been promoted as a way to halt progression of kidney disease while maintaining adequate nutrition. We review the literature to date comparing the effects of animal and vegetable protein on kidney function in health and disease. Diets with conventional amounts of protein, as well as high-protein diets, are reviewed. The literature shows that in short-term clinical trials, animal protein causes dynamic effects on renal function, whereas egg white, dairy, and soy do not. These differences are seen both in diets with conventional amounts of protein and those with high

amounts of protein. The long-term effects of animal protein on normal kidney function are not known. Although data on persons with chronic kidney disease are limited, it appears that high intake of animal and vegetable proteins accelerates the underlying disease process not only in physiologic studies but also in short-term interventional trials. The long-term effects of high protein intake on chronic kidney disease are still poorly understood. Several mechanisms have been suggested to explain the different effects of animal and vegetable proteins on normal kidney function, including differences in postprandial circulating hormones, sites of protein metabolism, and interaction with accompanying micronutrients.

Jessica D. McAleese, Linda L. Rankin, Garden-Based Nutrition Education Affects Fruit and Vegetable Consumption in Sixth-Grade Adolescents, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 662-665, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.01.015.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-Y/2/07b994c0d4d3eed08530c9e30f741e9f)
Abstract:
Schoolyard gardens are emerging as a nutrition education tool in academic settings. The purpose of this study was to investigate the effects of garden-based nutrition education on adolescents' fruit and vegetable consumption using a nonequivalent control group design. Sixth-grade students (n=99) at three different elementary schools made up a control and two treatment groups. Students in the treatment groups participated in a 12-week nutrition education program, and one treatment group also participated in garden-based activities. Students in all three groups completed three 24-hour food-recall workbooks before and after the intervention. A repeated-measures analysis of variance showed that adolescents who participated in the garden-based nutrition intervention increased their servings of fruits and vegetables more than students in the two other groups. Significant increases were also found in vitamin A, vitamin C, and fiber intake. Although further research is needed, the results of this study seem to indicate the efficacy of using garden-based nutrition education to increase adolescents' consumption of fruits and vegetables.

Marian L. Neuhouser, Beti Thompson, Gloria Coronado, Teri Martinez, Pingping Qu, A Household Food Inventory Is Not a Good Measure of Fruit and Vegetable Intake among Ethnically Diverse Rural Women, Journal of the American Dietetic Association, Volume 107, Issue 4, April 2007, Pages 672-677, ISSN 0002-8223, DOI: 10.1016/j.jada.2007.01.013.
(http://www.sciencedirect.com/science/article/B758G-4NB7HBK-11/2/d963801e98649f30d1d2b90669831737)
Abstract:
Environmental measures of food availability are surrogates of consumption. Such measures may be useful among populations for whom standard dietary assessment is difficult. The objective of this cross-sectional study was to test whether a measure of the household dietary environment would perform as well as or better than a standard fruit and vegetable assessment among ethnically diverse rural women. Participants were 154 non-Hispanic white, 157 Hispanic, and 102 Native American adult women residing in rural Washington state. Participants completed an interviewer-administered household inventory of fruits and vegetables and a standard measure of fruit and vegetable intake used in the 5 A Day for Better Health Program. Pearson correlation coefficients assessed the validity of the measures against biomarkers of fruit and vegetable consumption (serum carotenoids). Pearson correlations were poor to modest between the household inventory and serum carotenoids (r=0.06 to 0.22) and between the 5 A Day responses and serum carotenoids (r=-0.08 to 0.17). There were no differences by ethnic group; both short tools performed poorly compared with the biomarkers across Hispanic, non-Hispanic white, and Native-American participants. In conclusion, both the household inventory and the popular 5 A Day

measure were poor indicators of fruit and vegetable intake in this sample of ethnically diverse rural women.

G. Prinsloo, E. Van der Heever, M. Mofokeng, Establishing a medicinal incubator at the Agricultural Research Council -- Vegetable and Ornamental Plant Institute, South African Journal of Botany, Volume 73, Issue 2, April 2007, Page 308, ISSN 0254-6299, DOI: 10.1016/j.sajb.2007.02.104.
(http://www.sciencedirect.com/science/article/B7XN9-4NBRG1G-3J/2/ad5a90b0fdd25d29855ecbb12d617f12)

A.B. Martin-Diana, D. Rico, J.M. Frias, J.M. Barat, G.T.M. Henehan, C. Barry-Ryan, Calcium for extending the shelf life of fresh whole and minimally processed fruits and vegetables: a review, Trends in Food Science & Technology, Volume 18, Issue 4, April 2007, Pages 210-218, ISSN 0924-2244, DOI: 10.1016/j.tifs.2006.11.027.
(http://www.sciencedirect.com/science/article/B6VHY-4MNYYWG-2/2/400efaa516f4cef7b38092787ca95bd4)
Abstract:
The preservation of quality of fresh products is relevant for the industry due to its economic impact. This paper presents a comprehensive review of the use of different sources of calcium to preserve fresh fruits and vegetables in order to extend the shelf life and enhance the nutritional value. Emphasis is on discussing about the best sources of calcium, concentration, temperature and method of application, suitability of the commodities; and some hints for the cost/benefit analysis are presented.

R.B. Thompson, M. Gallardo, L.C. Valdez, M.D. Fernandez, Using plant water status to define threshold values for irrigation management of vegetable crops using soil moisture sensors, Agricultural Water Management, Volume 88, Issues 1-3, 16 March 2007, Pages 147-158, ISSN 0378-3774, DOI: 10.1016/j.agwat.2006.10.007.
(http://www.sciencedirect.com/science/article/B6T3X-4MFJJ7V-1/2/72e2f582dfeed7ef8f157c9b4208619e)
Abstract:
Thresholds of soil matric potential (SMP) and available soil water content (AWC) required to prevent water limitations between irrigations were determined for bell pepper, melon, and spring and winter tomato grown in Mediterranean-type greenhouses on the south-eastern coast of Spain. Thresholds were identified by measuring the divergence of leaf water potential of un-watered plants from that of well-watered plants. Soil matric potential thresholds were -58 kPa for pepper, -35 kPa for melon, and -38 to -58 kPa for tomato. In general, SMP thresholds were more negative under lower evaporative demand conditions such as during autumn and winter months. Available soil water content thresholds, for a given crop and drying cycle, differed appreciably depending on soil depth and the method used to calculate the values. For the four crops studied, AWC thresholds calculated at 0-40 cm were 13-15% higher than those calculated at 0-20 cm. Each AWC threshold for 0-20 cm depth was 21-29% lower when AWC was based on laboratory rather than field determinations of field capacity and permanent wilting point. For a given method of calculating AWC, AWC threshold values were similar for different crops and drying cycles, suggesting limited sensitivity of the AWC approach. Using the manufacturer's calibration, the capacitance sensor used for SWC measurements overestimated SWC by an average of 36%. An in situ calibration provided generally good agreement with the actual SWC between 0.15 and 0.22 cm3 cm-3; however, for higher SWC values, the in situ calibration underestimated SWC. The results of this study demonstrated the uncertainty of using recommended fixed AWC threshold values for irrigation management, using SWC sensors, because of issues related to the definition of rooting depth, measurement of FC and PWP, sensor calibration, and sensor accuracy across

the relevant range of water contents. These data suggest that SMP thresholds are much more reliable than AWC thresholds for scheduling irrigations in greenhouse-grown vegetable crops. Technical issues regarding on-farm measurement of SMP and SWC are discussed.
Keywords: Irrigation scheduling; Soil matric potential; Available water content; Capacitance sensor; EnviroSCAN; Volumetric soil water content; Tomato; Pepper; Melon

Azucena Mora, Santana L. Leon, Miguel Blanco, Jesus E. Blanco, Cecilia Lopez, Ghizlane Dahbi, Aurora Echeita, Enrique A. Gonzalez, Jorge Blanco, Phage types, virulence genes and PFGE profiles of Shiga toxin-producing Escherichia coli O157:H7 isolated from raw beef, soft cheese and vegetables in Lima (Peru), International Journal of Food Microbiology, Volume 114, Issue 2, 10 March 2007, Pages 204-210, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2006.09.009.
(http://www.sciencedirect.com/science/article/B6T7K-4MMFVHW-1/2/52f0c5673c0f0f5d5146d771b791c1ee)
Abstract:
The present study was conducted in Lima Metropolitana to evaluate the prevalence of Shiga toxin-producing Escherichia coli (STEC) O157:H7 in raw beef, raw ground beef, soft cheese and fresh vegetables, sampled at different markets in the city. Between October 2000 and February 2001, 407 food samples were collected from different markets in the 42 districts of Lima Metropolitana. Samples were assayed for E. coli O157 by selective enrichment in modified Tryptic Soy Broth containing novobiocin, followed by immunomagnetic separation (IMS) and plating onto sorbitol MacConkey agar supplemented with cefixime and potassium tellurite. Fifty (12.3%) of 407 food samples resulted positive for E. coli O157 isolation (23 of 102 ground beef; 15 of 102 beef meat; eight of 102 soft cheese and four of 101 fresh vegetables). Thirty-five E. coli O157 isolates were further analysed for the presence of virulence genes. All 35 were positive by PCR for O157 rfbE, fliCh7, eae-[gamma]1 and ehxA genes. In addition, genes encoding Shiga toxins were detected in 33 of 35 isolates, five isolates (14%) encoded stx1, stx2, and 28 (80%) stx2 only. The isolates were of seven different phage types (PT4, PT8, PT14, PT21, PT34, PT54, and PT87) with three phage types accounting for 80% of isolates: PT4 (15 isolates), PT14 (8 isolates), and PT21 (5 isolates). Interestingly, the majority (31 of 35; 89%) of E. coli O157:H7 isolates characterized in this study belonged mainly to the phage types previously found in STEC O157:H7 strains associated with severe human disease in Europe and Canada. Pulsed-field gel electrophoresis (PFGE) of 32 isolates revealed 14 XbaI-PFGE groups (I to XIV) of similarity > 85%, with 23 (72%) isolates grouped in five clusters. Some isolates from different districts presented a high clonal relatedness. Thus, PFGE group VIII clustered eleven strains from nine different districts. The broad range of PFGE subtypes found in this study demonstrates the natural occurrence of many genetic variants among STEC O157:H7 spread in Lima.
Keywords: E. coli O157:H7; STEC; Shiga toxins; Verotoxins; PFGE; Phage typing; Food contamination; Beef; Cheese; Vegetables; Peru

M.A. Piedecausa, M.J. Mazon, B. Garcia Garcia, M.D. Hernandez, Effects of total replacement of fish oil by vegetable oils in the diets of sharpsnout seabream (Diplodus puntazzo), Aquaculture, Volume 263, Issues 1-4, 6 March 2007, Pages 211-219, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2006.09.039.
(http://www.sciencedirect.com/science/article/B6T4D-4M2205R-3/2/4969380ca7674768eff45466a8e03bac)
Abstract:
The aim of this study was to determine the impact of dietary replacement of fish oil by vegetable oils on sharpsnout seabream growth, nutritive utilization, somatic parameters, body composition, feed digestibility, and muscle fatty acid profile, as well as to make an estimate of its economic repercussions. To this end, three isonitrogenous (48% crude protein) and isoenergetic (23 MJ/kg) experimental diets were formulated, using three different lipid sources: fish oil (FO), soybean oil

(SO) and linseed oil (LO). These diets were fed to triplicate groups of 30 sharpsnout seabream with an initial average weight of 14.9 g, three times a day to apparent satiation, over 92 days at 24.6 +/- 1.1 [degree sign]C. Our results show that the replacement of fish oil with soybean or linseed oil in sharpsnout seabream diets does not affect growth or feed utilization after three months of feeding. Fish on an SO diet exhibited higher hepatosomatic indices, whereas fillet percentages were significantly lower in fish that had been fed an FO diet. Apparent digestibility coefficients for dry matter, crude protein and crude lipid were significantly lower in fish that had consumed an LO diet. The muscle fatty acid composition reflected that of the diet. Consumption of vegetable oils reduced the muscle content of ARA (arachidonic acid), EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) to a lower degree than their corresponding reductions in the diet after fish oil replacement, which highlights their importance. Vegetable oils also increased the muscle content of linoleic and linolenic acids. In terms of economic performance, the SO diet was the least expensive diet, and had the best economic conversion ratio.
Keywords: Sharpsnout seabream; Diplodus puntazzo; Fish oil replacement; Soybean oil; Linseed oil; Alternative lipid sources

Evelien Reinaerts, Jascha de Nooijer, Math Candel, Nanne de Vries, Explaining school children's fruit and vegetable consumption: The contributions of availability, accessibility, exposure, parental consumption and habit in addition to psychosocial factors, Appetite, Volume 48, Issue 2, March 2007, Pages 248-258, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.09.007.
(http://www.sciencedirect.com/science/article/B6WB2-4MBT1HN-1/2/c0b320760106afd17ace3f093590bf14)
Abstract:
We studied the contributions of parental fruit and vegetable (F&V) consumption, availability and accessibility of F&V in the home, exposure to F&V, and habit, in addition to psychosocial factors, in explaining F&V consumption in 4-12-year-old children. Furthermore, we looked for effect modification by ethnicity and gender. Children's parents (n=1739) completed a questionnaire assessing psychosocial and additional factors regarding their children's F&V consumption. Consumption was assessed by a food-frequency questionnaire. The model explained the children's F&V consumption better when the additional factors were included (R2=.49 and R2=.50 for fruit consumption, and R2=.33 and R2=.33 for vegetable consumption). Stepwise multi-level regression analyses revealed that habit was the most influential correlate of F&V consumption. It is concluded that nutrition education interventions aimed at stimulating F&V consumption among children should take into account that the consumption of fruit and that of vegetables are clearly different behaviors, with different influencing factors for boys and girls and children of native or non-native background. Furthermore, interventions to increase F&V consumption should include strategies aimed at making these behaviors habitual.
Keywords: Fruit and vegetable intake; School children; Psychosocial factors; Parental consumption; Availability; Accessibility; Exposure; Habit

Remco C. Havermans, Anita Jansen, Increasing children's liking of vegetables through flavour-flavour learning, Appetite, Volume 48, Issue 2, March 2007, Pages 259-262, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.08.063.
(http://www.sciencedirect.com/science/article/B6WB2-4MC718S-1/2/c31e240b9f3f152615eb11bc66472adb)
Abstract:
Positive flavour-flavour learning refers to a form of Pavlovian conditioning in which a neutral flavour is paired with an already preferred flavour. Due to this pairing one acquires an association between the neutral flavour and the liked flavour, resulting in a positive shift in liking and hence preference for the initially neutral flavour. In the present study, it was investigated whether a flavour-flavour learning procedure increases children's preference for a specific vegetable

taste.Twenty one children were recruited and received six pairs of conditioning trials comprising the tasting of a sweetened vegetable and another unsweetened vegetable taste. At test the children had to evaluate the tastes unsweetened. Results show an increase in preference for the previously sweetened vegetable taste. It is concluded that flavour-flavour learning may be beneficial in increasing children's liking and acceptance of vegetables.
Keywords: Children; Conditioning; Flavour preferences; Vegetables

Ben L.M.M. Leroy, Lydia Bommele, Dirk Reheul, Maurice Moens, Stefaan De Neve, The application of vegetable, fruit and garden waste (VFG) compost in addition to cattle slurry in a silage maize monoculture: Effects on soil fauna and yield, European Journal of Soil Biology, Volume 43, Issue 2, March-April 2007, Pages 91-100, ISSN 1164-5563, DOI: 10.1016/j.ejsobi.2006.10.005.
(http://www.sciencedirect.com/science/article/B6VR7-4MFCP3S-1/2/128df93e0258510da7644e92bc016254)
Abstract:
In Flanders, vegetable, fruit and garden (VFG) wastes are collected selectively and composted. We studied the effects of the combined application of three different doses of VFG compost and cattle slurry during 7 years on maize dry matter yields and three soil faunal groups: nematodes, micro-arthropods (springtails and mites) and earthworms. Combined application of VFG compost and slurry resulted in the highest yields. Initially, there was a clear yield depression on plots amended with compost in contrast to an upward trend in the last application years, proving a significant residual N effect from cumulative compost applications. The plant parasitic nematodes Pratylenchus sp. and the Tylenchidae were less abundant on plots receiving organic amendments, while the population of the bacteriophagous Rhabditidae was higher on these plots. Adding organic amendments resulted in increased numbers of micro-arthropods, springtails as well as mites. Earthworms were significantly more abundant when organic amendments were applied. The VFG compost had a larger overall positive effect on the three soil faunal groups than cattle slurry.
Keywords: VFG compost; Cattle slurry; Nematodes; Springtails; Mites; Earthworms; Yield

Jagdish Singh, A.K. Upadhyay, Kundan Prasad, Anant Bahadur, Mathura Rai, Variability of carotenes, vitamin C, E and phenolics in Brassica vegetables, Journal of Food Composition and Analysis, Volume 20, Issue 2, March 2007, Pages 106-112, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.08.002.
(http://www.sciencedirect.com/science/article/B6WJH-4M877CR-1/2/6addbb4c6d566ae26218b4631ea3e3e0)
Abstract:
Antioxidant phytochemicals such as vitamin C, [beta]-carotene, lutein, [alpha]-tocopherol, and total phenolics were estimated in fresh samples at the edible maturity stage in different genotypes of cruciferous vegetables using a reverse-phase HPLC system. Maximum mean vitamin C (52.9 mg/100 g), [beta]-carotene (0.81 mg/100 g), lutein (0.68 mg/100 g), dl-[alpha]-tocopherol content (0.47 mg/100 g) and phenol content (63.4 mg/100 g) was recorded in broccoli. Results indicate that the cruciferous vegetables are a relatively good source of abundant antioxidants, and there is a substantial and significant variation, both within and between the subspecies, for the antioxidant phytochemicals.
Keywords: Vitamin C; [beta]-carotene; Lutein; dl-[alpha]-tocopherol; Total phenolics; Antioxidant phytochemicals; Brassica vegetables

Lijiang Song, Paul J. Thornalley, Effect of storage, processing and cooking on glucosinolate content of Brassica vegetables, Food and Chemical Toxicology, Volume 45, Issue 2, February 2007, Pages 216-224, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.07.021.

(http://www.sciencedirect.com/science/article/B6T6P-4KSHB9D-C/2/c217c073fe546cb5b2ddc40a3ec0dc65)
Abstract:
Epidemiological studies have shown that consumption of Brassica vegetables decrease the risk of cancer. These associations are linked to dietary intake of glucosinolates and their metabolism to cancer preventive isothiocyanates. Bioavailability of glucosinolates and related isothiocyanates are influenced by storage and culinary processing of Brassica vegetables. In this work, the content of the 7 major glucosinolates in broccoli, Brussels sprouts, cauliflower and green cabbage and their stability under different storage and cooking conditions is examined. Glucosinolates and isothiocyanates were quantified by liquid chromatography with tandem mass spectrometric detection (LC-MS/MS). Isothiocyanates were detected with high sensitivity as the corresponding thiourea derivatives. Storage at ambient temperature and in a domestic refrigerator showed no significant difference and a minor loss (9-26%) of glucosinolate levels over 7 days. Vegetables shredded finely showed a marked decline of glucosinolate level with post-shredding dwell time - up to 75% over 6 h. Glucosinolate losses were detected partly as isothiocyanates. Cooking by steaming, microwaving and stir-fry did not produce significant loss of glucosinolates whereas boiling showed significant losses by leaching into cooking water. Most of the loss of the glucosinolates (~90%) was detected in the cooking water. Increased bioavailability of dietary isothiocyanates may be achieved by avoiding boiling of vegetables.
Keywords: Brassica vegetables; Glucosinolates; Isothiocyanates; Storage; Cooking; Freezing

Guillermo Padilla, Maria Elena Cartea, Pablo Velasco, Antonio de Haro, Amando Ordas, Variation of glucosinolates in vegetable crops of Brassica rapa, Phytochemistry, Volume 68, Issue 4, February 2007, Pages 536-545, ISSN 0031-9422, DOI: 10.1016/j.phytochem.2006.11.017.
(http://www.sciencedirect.com/science/article/B6TH7-4MMFVTK-1/2/475145bbec5c4a9846e7e899339aef29)
Abstract:
Glucosinolate levels in leaves were determined in a collection of 113 varieties of turnip greens (Brassica rapa L.) from northwestern Spain grown at two sites. Sensorial attributes were also assessed by a consumer panel. The objectives were to determine the diversity among varieties in total glucosinolate content and glucosinolate profile and to evaluate their sensory attributes in relation to glucosinolate content for breeding purposes. Sixteen glucosinolates were identified, being the aliphatic glucosinolates, gluconapin and glucobrassicanapin the most abundant. Other aliphatic glucosinolates, such as progoitrin, glucoalyssin, and gluconapoleiferin were relatively abundant in varieties with a different glucosinolate profile. Indolic and aromatic glucosinolate concentrations were low and showed few differences among varieties. Differences in total glucosinolate content, glucosinolate profile and bitterness were found among varieties, with a total glucosinolate content ranging from 11.8 to 74.0 [mu]mol g-1 dw at one site and from 7.5 to 56.9 [mu]mol g-1 dw at the other site. Sensory analysis comparing bitterness with variation in glucosinolate, gluconapin and glucobrassicanapin concentrations suggested that these compounds and their breakdown products are not the only determinants of the characteristic flavour of this vegetable. Other phytochemicals are probably involved on the characteristic bitter flavour. The varieties MBG-BRS0132, MBG-BRS0082, MBG-BRS0173, and MBG-BRS0184 could be good candidates for future breeding programs since they had high total glucosinolate content and good agronomic performance. The presence of glucoraphanin in some varieties should be studied more extensively, because this aliphatic glucosinolate is the precursor of sulforaphane, a potent anti-cancer isothiocyanate.
Keywords: Brassica rapa; Bitterness; Consumer panel; Glucosinolates; Local varieties; Turnips

QingLi Zhang, XueZheng Shi, Biao Huang, DongSheng Yu, I. Oborn, K. Blomback, HongJie Wang, T.F. Pagella, F.L. Sinclair, Surface water quality of factory-based and vegetable-based peri-

urban areas in the Yangtze River Delta region, China, CATENA, Volume 69, Issue 1, Influences of rapid urbanization and industrialization on soil resource and its quality in China, 16 January 2007, Pages 57-64, ISSN 0341-8162, DOI: 10.1016/j.catena.2006.04.012.
(http://www.sciencedirect.com/science/article/B6VCG-4K9C6VB-1/2/99dff35d09ca216a19ea888df137428c)
Abstract:
Detailed surveys of surface water in two contrasting peri-urban areas in the Yangtze River Delta region of China were conducted to determine the distribution of heavy metals, nitrogen (N) and phosphorus (P) as well as the speciation of N and P. A factory-based (FB) area was compared with a vegetable-based (VB) area during the dry season. The concentrations of heavy metals in the surface water in the FB area were higher than those in the VB area, suggesting modest contamination of surface water with Zn, Cu, Cr and Pb but not Cd, from discharge of factory effluent in the FB area but not the VB area. Although total N (TN) and total P (TP) levels in the surface water were high in both areas, the surface water in the VB area had significantly higher levels of nitrate N (NO3-N), organic N (ON) and TN than those in the FB area. In both areas, the levels of water-soluble P (WP), organic P (OP) and TP were high in the river water that received municipal wastewater. The distribution of N and P species throughout the surface water system indicated that the NO3-N and ON mainly came from vegetable fields, while ammonium N (NH4-N), WP and OP were mainly from municipal wastewater. Treatment of municipal wastewater prior to discharge to reduce N and P by purification is recommended together with research and extension to develop more efficient use of N and P fertilizer by vegetable farmers.
Keywords: Peri-urban; Surface waters; Heavy metals; Nitrogen; Phosphorus; Yangtze River Delta region

Solveig Uglem, Wenche Frolich, Tonje Holte Stea, Margareta Wandel, Correlates of vegetable consumption among young men in the Norwegian National Guard, Appetite, Volume 48, Issue 1, January 2007, Pages 46-53, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.06.005.
(http://www.sciencedirect.com/science/article/B6WB2-4KW5W55-1/2/f9ad0168705fd5bbe205bd7d5195cf3d)
Abstract:
The aim of this study was to investigate socio-environmental, personal and behavioural factors associated with vegetable consumption among young men in the military. Respondents included 578 male recruits (mean age 19.7) in the Norwegian National Guard (response rate 78%). Data were collected with a food diary (4-day record) and an attitudinal questionnaire. A model including items on personal factors (attitudes, preferences, self-efficacy, knowledge and perceived availability), socio-environmental factors (social influence, socio-economic status, eating habits at home) and behavioural factors (meal frequency, number of hot meals, snack consumption, smoking) was developed to assess correlates of the recruits' vegetable intake. The study showed that the recruits' consumption of vegetables (including potatoes) varied from 0 to 957 g/day with an average of 244 g/day. Overall, 32% of the variance in vegetable consumption was explained by factors included in the model. The most important correlates were occupational status of the parents, frequency of vegetable consumption when living at home, social influence, preferences for cooked vegetables, weight beliefs, number of hot meals for lunch and dinner and smoking habits. In conclusion, the present study indicates that in addition to cognitive factors, socio-environmental and behavioural factors can explain the variance in vegetable intake among young men in the military.
Keywords: Vegetables; Correlates; Socio environmental; Personal; Behaviour; Young men

J. Biswas, R. Chowdhury, P. Bhattacharya, Mathematical modeling for the prediction of biogas generation characteristics of an anaerobic digester based on food/vegetable residues, Biomass

and Bioenergy, Volume 31, Issue 1, January 2007, Pages 80-86, ISSN 0961-9534, DOI: 10.1016/j.biombioe.2006.06.013.
(http://www.sciencedirect.com/science/article/B6V22-4KV8T8S-2/2/da613d949976ccaefafe9de82fe8f8c9)
Abstract:
An anaerobic digester of 10 L capacity has been operated in batch mode at an optimum temperature of 40 [degree sign]C and at a pH of 6.8 using vegetable/food residues as the feed material. The effect of slurry concentration and that of the concentration of carbohydrate, protein and fat in the slurry on the biogas production rate and methane concentration in the biogas have been studied. The slurry concentration has been varied in the range of 72.0-700 kg m-3. At a slurry concentration of 67.7 kg m-3 the effect of carbohydrate concentration has been studied by varying the ratios of carbohydrate, protein and fat in the range of 6.9:4.3:1-12.1:4.3:1 by using a sole carbohydrate source, namely sucrose. The effect of protein concentration has been studied by varying the ratios of carbohydrate, protein and fat in the range of 5.6:7.0:1-5.6:13.0:1 by using a sole protein source, namely papain and that of fat concentration has been studied by varying the ratios of carbohydrate, protein and fat in the range of 7.2:10:1.6-7.2:10:5 by using a fat source, namely vanaspati. A deterministic mathematical model using differential system equations have been developed and it is capable of predicting the behaviour of the digester satisfactorily.
Keywords: Food residues from municipal market; Microbial treatment; Methane content of biogas; Effect of carbohydrate; Protein and fat; Deterministic model

Nabasree Dasgupta, Bratati De, Antioxidant activity of some leafy vegetables of India: A comparative study, Food Chemistry, Volume 101, Issue 2, 2007, Pages 471-474, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.02.003.
(http://www.sciencedirect.com/science/article/B6T6R-4JJ884V-2/2/d934076a2e5e002eb69f62d2375679ae)
Abstract:
Eleven edible leafy vegetables of India have been analysed for their free radical-scavenging activity in different systems of assay, e.g. DPPH radical-scavenging activity, superoxide radical-scavenging activity in riboflavin/light/NBT system, hydroxyl radical-scavenging activity, and inhibition of lipid peroxidation induced by FeSO4 in egg yolk. Total antioxidant activity was measured, based on the reduction of Mo(VI) to Mo(V) by the extract and subsequent formation of green phosphate/Mo(V) complex at acid pH. The extracts were found to have different levels of antioxidant properties in the systems tested. Considering all the activities, it can be said that Ipomoea reptans has good activity amongst the eleven plant materials screened for their antioxidant properties. Lowest activity was found in Nyctanthes arbortristis. Many flavonoids and related polyphenols contribute significantly to the total antioxidant activity of many fruits and vegetables. However, there was no correlation between antioxidant activity and total phenol/flavonoid content.
Keywords: Leafy vegetables; Antioxidant activity; Phenols; Flavonoids

S.M. Abdulkarim, K. Long, O.M. Lai, S.K.S. Muhammad, H.M. Ghazali, Frying quality and stability of high-oleic Moringa oleifera seed oil in comparison with other vegetable oils, Food Chemistry, Volume 105, Issue 4, 2007, Pages 1382-1389, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.013.
(http://www.sciencedirect.com/science/article/B6T6R-4NS2GP8-6/2/0d8c4ec9ce8eebfbdf57293a7a953402)
Abstract:
The performance of the high-oleic Moringa oleifera seed oil (MoO) in deep-frying was evaluated by comparing its frying stability with other conventional frying oils [canola (CLO), soybean (SBO), and palm olein (PO)]. The oils were used as a frying media to fry potato chips for 6 h a day up to a

maximum of 5 days. Standard methods for the determination of used frying oil deterioration such as changes in color, viscosity, free fatty acids (FFA), peroxide value (PV), p-anisidine value (p-AV), iodine value (IV), specific extinction 233 and 269 nm) and total polar compounds (TPC) were used to evaluate the oils. At the end of the frying period, the change in percent FFA from the initial to final day of frying were as follows SBO (60.0%), PSO (65.0%), MoO (66.6%) and CLO (71.4%) and the change in p-AV and TOTOX value of MoO were found to be significantly lower ($P < 0.05$) than the rest of the oils tested, followed by PO, with the highest values obtained in CLO and SBO. The levels of conjugated dienes and trienes at 233 and 269 nm) throughout the frying period were lowest in MoO and PO followed CLO, with highest levels found in SBO. The rate of darkening and increase in viscosity were proportional to the frying time for all the oils. PO darkened earlier followed by CLO. At the end of frying period, TPC was significantly ($P < 0.05$) lower in MoO (20.78%) and PSO (21.23%), as compared to CLO (28.73%) and SBO (31.82%).
Keywords: High-oleic Moringa oleifera seed oil; Oxidative stability and frying quality

Ewa Cieslik, Teresa Leszczynska, Agnieszka Filipiak-Florkiewicz, Elzbieta Sikora, Pawel M. Pisulewski, Effects of some technological processes on glucosinolate contents in cruciferous vegetables, Food Chemistry, Volume 105, Issue 3, 2007, Pages 976-981, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.04.047.
(http://www.sciencedirect.com/science/article/B6T6R-4NN6TNN-2/2/3bedab241bc66466f365eec344819b0e)
Abstract:
Effects of blanching, boiling and freezing of selected cruciferous vegetables (Brussels sprouts, white and green cauliflower, broccoli, and curly cale) on their glucosinolate (GLS) contents were determined. It was found that blanching and cooking of the vegetables led to considerable ($P < 0.05$) losses of total GLS, from 2.7 to 30.0% and from 35.3 to 72.4%, respectively. No systematic changes in total GLS were found in the vegetables that were blanched and frozen for 48 h. In addition, the highest concentration of cancer-protective compounds, such as aliphatic and indole GLS, were found in Brussels sprouts (sinigrin and glucobrassicin) and in broccoli (glucoraphanin).
Keywords: Glucosinolates; Cruciferous vegetables; Blanching; Cooking; Freezing

Ayodeji O. Fasuyi, Bio-nutritional evaluations of three tropical leaf vegetables (Telfairia occidentalis, Amaranthus cruentus and Talinum triangulare) as sole dietary protein sources in rat assay, Food Chemistry, Volume 103, Issue 3, 2007, Pages 757-765, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.09.030.
(http://www.sciencedirect.com/science/article/B6T6R-4M7VFR0-1/2/b6aeef0db59450fd11aa41057f5f64b5)
Abstract:
The bio-nutritional potentials of three tropical vegetable leaf meals (Telfairia occidentalis leaf meal, TOLM; Talinum triangulare leaf meal, TTLM and Amaranthus cruentus leaf meal, ACLM) were investigated using albino rat as the test animal. Some protein quality evaluation indices were measured when the three vegetable leaf meals (VLMs) were used as sole protein sources in diets fed to the experimental animals and results were compared with data obtained for a basal nitrogen free diet (diet 1) and another reference diet (diet 2) in which the protein was solely supplied by nutritional casein (pure protein). The weight gain value recorded over a 10 day experimental period for the test animals on the reference (casein) diet 2 was consistently higher ($P < 0.05$) than the weight gain value obtained for the animals on the 3 VLMs diets (diets 3-5). Feed intake values recorded for the rats on the VLMs were similar ($P > 0.05$) and significantly higher ($P < 0.05$) than the value obtained for rats on the reference (casein) diet. Nitrogen excreted in faeces (feacal nitrogen) was lowest ($P < 0.05$) for the animals in reference diet 2. However, the nitrogen excreted in urine (urinary nitrogen) was highest ($P < 0.05$) for the animals on reference diet 2 and lowest for animals on diet 3 (TOLM diet) ($P < 0.05$). The nitrogen retention (NR) value obtained for the test

animals on the reference diet 2 was similar (P > 0.05) to the value obtained for animals on diet 3 (TOLM). These values were significantly higher (P > 0.05) than NR values obtained for animals on diets 4 (TTLM) and 5 (ACLM). Expectedly, the apparent nitrogen digestibility (AND), protein efficiency ratio (PER), net protein ratio (NPR), true digestibility (TD), biological value (BV) and net protein utilization (NPU) all indicated higher and better values (P < 0.05) than the corresponding values obtained for the 3 VLMs diets (diets 3-5).
Keywords: Rat bioassay; Protein quality evaluation; Reference diet; Nitrogen free diet

Fernando Granado-Lorencio, Begona Olmedilla-Alonso, Carmen Herrero-Barbudo, Inmaculada Blanco-Navarro, Belen Perez-Sacristan, Silvia Blazquez-Garcia, In vitro bioaccessibility of carotenoids and tocopherols from fruits and vegetables, Food Chemistry, Volume 102, Issue 3, 2007, Pages 641-648, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.05.043.
(http://www.sciencedirect.com/science/article/B6T6R-4KJTNS0-5/2/ce5fa6ce687dd9407d7ab835feaf9b8c)
Abstract: Aim of the study
To assess the in vitro bioaccessibility of carotenoids, including xanthophyll esters, and tocopherols from fruits and vegetables.Results
Stability for carotenoids and tocopherols was over 70%. Xanthophyll esters were cleaved by cholesterol esterase but not by human pancreatic lipase. Less than 40% of the [beta]-cryptoxanthin initially present was hydrolyzed and the amount of free xanthophylls recovered was higher when liquid was used than when fresh homogenized matrix was employed. cis-Isomers of [beta]-carotene and lutein did not significantly increase during the process. Xanthophylls were more efficiently transferred into supernatants than tocopherols and [beta]-carotene. cis-Carotenoids, epoxy-xanthophylls and ester forms were also transferred.Conclusion
The results are consistent with observations in other in vitro digestion models and human studies and support the usefulness of in vitro assessment to study food-related determinants of the bioavailability of carotenoids and tocopherols from fruits and vegetables.
Keywords: Bioaccessibility; Carotenoids; Tocopherols; In vitro digestion; Xanthophyll esters

Kun Zeng, Tangbin Yang, Pin Zhong, Shiyi Zhou, Lina Qu, Jia He, Zhisheng Jiang, Development of an indirect competitive immunoassay for parathion in vegetables, Food Chemistry, Volume 102, Issue 4, 2007, Pages 1076-1082, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.06.050.
(http://www.sciencedirect.com/science/article/B6T6R-4KV2YF0-3/2/24974232ef3401ca040c48369919b63c)
Abstract:
An indirect competitive immunoassay for the insecticide parathion has been optimized and characterized. This assay is based on a monoclonal antibody (2H9) produced from an immunogen, a bovine thyroglobulin (BTG) conjugate wherein the reduced form of parathion was multiply bound to the carrier protein via diazo bonds. Assay was performed in the parathion-HSA coated (0.25 [mu]g/ml) ELISA format in which antibody was diluted 1:2000. Several physicochemical factors (pH, ionic strength, BSA concentrations and organic solvent) that influence assay performance were studied and optimized. Finally, the assay was applied to the analysis of parathion in spiked vegetable samples. The sensitivity, estimated as the IC50 value, was 360 ng/ml, with a practical working range between 47 and 6000 ng/ml, a limit of detection of 26 ng/ml, and inter-assay and intra-assay variations less than 10%. The average recovery of parathion added to potato, celery and Chinese cabbage were 173 +/- 34%, 108 +/- 15% and 98 +/- 6%, respectively.
Keywords: Parathion; Indirect competitive immunoassay; Recovery

S. Zawiyah, Y.B. Che Man, S.A.H. Nazimah, C.K. Chin, I. Tsukamoto, A.H. Hamanyza, I. Norhaizan, Determination of organochlorine and pyrethroid pesticides in fruit and vegetables using

SAX/PSA clean-up column, Food Chemistry, Volume 102, Issue 1, 2007, Pages 98-103, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.05.003.
(http://www.sciencedirect.com/science/article/B6T6R-4JY413M-4/2/0da32b6fd0cfece5dcc4c6ed4d624b44)
Abstract:
A study was conducted to investigate the organochlorine and pyrethroid pesticide residues in fruit and vegetables from market in Malaysia. Gas chromatography with electron capture detector (GC-ECD) was used to determine the concentrations of pesticide residues and SAX/PSA was used as a clean-up. Cypermethrin was detected in 38 of 302 vegetable samples with a mean value of 0.47 mg/kg. The mean value of cypermethrin for tomato, chinese parsley, chinese celery, chilli, brinjal, french beans, green mustard and capsicum ranged from 0.16 to 1.48 mg/kg. The mean values for all samples were below the maximum residue limits (MRLs) allowed by the Malaysian Food Regulations except for brinjal. None of the 206 fruit samples tested showed any pesticide residue.
Keywords: Organochlorine and pyrethroid pesticides; Fruit and vegetables; Clean-up

Farooq Anwar, Abdullah Ijaz Hussain, Shahid Iqbal, Muhammad Iqbal Bhanger, Enhancement of the oxidative stability of some vegetable oils by blending with Moringa oleifera oil, Food Chemistry, Volume 103, Issue 4, 2007, Pages 1181-1191, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.10.023.
(http://www.sciencedirect.com/science/article/B6T6R-4MD9KH4-5/2/9bed1dab99157d0faef64d38cd4862a0)
Abstract:
Blends (20%, 40%, 60%, 80% w/w) of Moringa oleifera oil (MOO) with sunflower oil (SFO) and soybean oil (SBO) were prepared to evaluate the changes in fatty acid (FA) composition, oxidative and thermal stability of SFO and SBO. The blending of MOO with SFO and SBO in proportions of 0-80% resulted in the reduction of linoleic acid (C18:2) content of SFO and SBO from 67.0% to 17.2% and 56.2% to 14.6% and increase in the contents of oleic acid (C18:1) from 26.2% to 68.3% and 21.4% to 65.9%, factors of 0.72, 0.72 and 1.27, 1.33, respectively. A storage ability test (180 days; ambient conditions) showed an appreciable improvement in the oxidative stability of substrate oils with increase of MOO concentration, as depicted by the least oxidative alterations in PV, IV and highest increase in induction period, IP, of the MOO:SBO (80: 20 w/w) blend. Each 20% addition of MOO resulted in decreases of PV and IV by factors of 0.84, 0.85 and 0.89, 0.88, respectively, and increases in IP by factors of 1.45 and 1.37 of SFO and SBO, respectively.
The heating performance test (180 [degree sign]C for 42 h; 6 h heating cycle per day), as followed by the measurement of polymer contents and total polar contents (TPC), also revealed the MOO:SBO (80:20 w/w) blend to be the most stable. Every 20% addition of MOO in SFO and SBO resulted in reduction of the polymer contents and TPC of SFO and SBO by factors of 0.91, 0.92 and 0.94, 0.94, respectively. On the basis of the present findings, it appears that proper blending of high linoleic oils with MOO can result in oil blends which could meet nutritional needs with improved stability for domestic cooking and deep-frying.
Keywords: Blending; Storage stability; Heating performance; Moringa oleifera oil; Fatty acid composition; Total polar components; Induction period

Molay Kumar Roy, Makiko Takenaka, Seiichiro Isobe, Tojiro Tsushida, Antioxidant potential, anti-proliferative activities, and phenolic content in water-soluble fractions of some commonly consumed vegetables: Effects of thermal treatment, Food Chemistry, Volume 103, Issue 1, 2007, Pages 106-114, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.08.002.
(http://www.sciencedirect.com/science/article/B6T6R-4M1TT63-8/2/2f5f663d8ed987126e795534f64f9fa8)
Abstract:

Thermal treatments associated with food processing can alter the phenolic content of vegetables; yet, the biological properties associated with altered phenolic content have not been well delineated. We assessed the effects of various thermal treatments on total phenolic content, antioxidant and anti-proliferative activities of water-soluble fractions from six commonly consumed vegetables. Phenolic content in the water-soluble fraction of the tested vegetables was in the order of spinach > `komatsuna' > `haruna' > `chingensai' > white cabbage > Chinese cabbage. Total antiradical activity against the DPPH radical was in the order of `komatsuna' > spinach > `haruna' > `chingensai' > white cabbage > Chinese cabbage. Antiradical activity against hydroxyl radicals (deoxyribose assay) was highest for spinach and white cabbage. White cabbage extract showed the highest anti-proliferative activity in HL 60 cells. Normal cooking temperatures detrimentally affected phenolic content as well as antiradical and anti-proliferative activities of juice from most of the vegetables tested. However, mild heating of vegetable juices (50 [degree sign]C, 10-30 min) preserved 80-100% of phenolic content, and both antioxidant activity and cell proliferation inhibition activities. The degree of thermal processing affects not only the content of phenolic compounds in vegetables but also beneficial biological effects associated with these compounds.
Keywords: Green vegetables; Thermal effect; Phenolic content; Antioxidant; Cell proliferation inhibition; HL-60

Jin-Yuarn Lin, Ching-Yin Tang, Determination of total phenolic and flavonoid contents in selected fruits and vegetables, as well as their stimulatory effects on mouse splenocyte proliferation, Food Chemistry, Volume 101, Issue 1, 2007, Pages 140-147, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.01.014.
(http://www.sciencedirect.com/science/article/B6T6R-4JDMVDB-7/2/d47012ecda83317b0b9578c2c8bb662a)
Abstract:
This study selected 13 fruits and vegetables to determine their total phenolic and flavonoid contents and their stimulatory effects on splenocyte proliferation from female BALB/c mice. The highest total phenolic content was observed in mulberry (1515.9 +/- 5.7 mg gallic acid equivalents (GAE)/100 g fresh matter (FM)) among four selected fruit species. The highest total phenolic content was observed in a variety of red onions (310.8 +/- 4.9 mg GAE/100 g FM) among nine selected vegetable species. The highest total flavonoid content was observed in mulberry (250.1 +/- 6.3 mg quercetin equivalents (QE)/100 g FM) among the selected fruits. The highest total flavonoid content was observed in ceylon spinach (133.1 +/- 26.2 mg QE/100 g FM) among the selected vegetables. The mulberry, strawberry and red onion demonstrated an immuno-modulatory potential via stimulating splenocyte proliferation. Bitter melon showed a significantly ($P < 0.05$) negative correlation with splenocyte proliferation. Their immuno-modulatory components are highly correlated with phenolics, including flavonoids. The total phenolic contents in all selected fruits and vegetables significantly correlated with splenocyte proliferation in vitro.
Keywords: Phenolics; Flavonoids; Splenocyte proliferation; Strawberry; Mulberry; Red onion; Bitter melon

Marica Rakin, Maja Vukasinovic, Slavica Siler-Marinkovic, Milan Maksimovic, Contribution of lactic acid fermentation to improved nutritive quality vegetable juices enriched with brewer's yeast autolysate, Food Chemistry, Volume 100, Issue 2, 2007, Pages 599-602, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.09.077.
(http://www.sciencedirect.com/science/article/B6T6R-4HR72NX-7/2/4d5112d91af1c0014ea9b5febbe2032f)
Abstract:
Vegetables are rich sources of the biologically active compounds which have beneficial effects in prevention of some diseases and certain types of cancer. From the point of view of protection and health, the objective of this paper was to optimize food content in order to obtain a functional food.

In order to improve the nutritive and protective properties of the product, the beetroot and carrot juices enriched with brewer's yeast autolysate were subjected to lactic-acid fermentation with Lactobacillus acidophilus NCDO1748.
Chemical compositions of produced fermented bioproducts showed that fermented carrot juice with brewer's yeast autolysate had higher contents of some minerals (Ca, P, Fe) and [beta]-carotene than had beetroot juice with brewer's yeast autolysate. Higher mineral content in the carrot juice better affected production of lactic acid in that sample. Fermented beetroot juice with brewer's yeast autolysate had higher contents of betanin and vitamin C, which were in accordance with the contents of these components in raw beetroot that did not significantly vary during the processing of the material (pasteurization, fermentation). Thus the fermented bioproduct 3, which is a mixture of beetroot and carrot juices with brewer's yeast autolysate, represents the product with optimum proportions of pigments, vitamins and minerals.
Keywords: Fermented juice; Beetroot; Carrot; Brewer's yeast autolysate; Chemical composition

S. Hemalatha, Ghafoorunissa, Sesame lignans enhance the thermal stability of edible vegetable oils, Food Chemistry, Volume 105, Issue 3, 2007, Pages 1076-1085, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.023.
(http://www.sciencedirect.com/science/article/B6T6R-4NSMMW2-9/2/10ed932b8108a831778c6c78781343a1)
Abstract:
The effect of sesame lignans on the thermal and storage stability of edible vegetable oils (soybean-SBO, sunflower-SFO and ricebran-RBO) was studied by (i) determining the total free radical scavenging activity (RSA) using DPPH, (ii) % total tocol retention, (iii) lignan profile and (iv) PUFA composition. The order of RSA and retention of total tocols of oils heated up to 120 min at frying temperature (FT) were RBO = SBO > SFO and RBO > SBO > SFO, respectively. Heating SBO or SFO at FT after addition of 1.2% lignans increased RSA of SBO to a greater extent than that of SFO, and increased retention of total tocols only in SBO. However, addition of lignans did not further increase the RSA of RBO. Heating oils with added lignans, increased sesamol and decreased sesamolin while sesamin was relatively resistant to heat. These findings suggest that sesame lignans may have potential application as natural antioxidants in the edible oil and food industry.
Keywords: DPPH; Edible vegetable oils; Radical scavenging activity; Sesamin; Sesamolin; Sesame lignans; Thermal stability; Storage stability; Total lignans; Total tocols

Jin-Ae Kim, Seung-Beom Hong, Woo-Suk Jung, Chang-Yeon Yu, Kyung-Ho Ma, Jae-Goon Gwag, Ill-Min Chung, Comparison of isoflavones composition in seed, embryo, cotyledon and seed coat of cooked-with-rice and vegetable soybean (Glycine max L.) varieties, Food Chemistry, Volume 102, Issue 3, 2007, Pages 738-744, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.06.061.
(http://www.sciencedirect.com/science/article/B6T6R-4KWTFN2-2/2/763fe970e7fb5236b78e0e0bb2feee05)
Abstract:
In order to study the content and composition of isoflavones retained in soybean seed component, obtained each component part the embryo, cotyledon and seed coat tissues of nine different soybean varieties were analyzed for 12 isoflavones using high performance liquid chromatography with photo diode array detector (HPLC-PDA) and were compared to each other. A total average concentration of isoflavone was 2887 [mu]g g-1 in embryo, 575 [mu]g g-1 in whole seed, 325 [mu]g g-1 in cotyledon, and 33 [mu]g g-1 in seed coat. With respect to each tissue of soybean varieties, isoflavone content was highest in Geomjeongkong 2 embryo (5701 [mu]g g-1), Geomjeongolkong whole seed (1321 [mu]g g-1), Heugcheongkong cotyledon (951 [mu]g g-1), and Keunolkong seed coat (56 [mu]g g-1). Isoflavone was least present in Keunolkong embryo (341 [mu]g g-1), Hwaeomputkong whole seed (175 [mu]g g-1), Seonheukkong cotyledon (81 [mu]g g-

1), and Seoklyangputkong seed coat (5 [mu]g g-1). Overall, embryo and seed coat of all nine varieties contained isoflavones at the highest and lowest level, respectively. Isoflavones accumulated in the order of malonylglycoside, glycoside, acetylglycoside, and aglycon, among which malonylglycoside was the most abundant form ranging from 66% to 79% of the total isoflavone content in all three tissues. The embryo of cooked-with-rice soybean with black seed coat appears to be the best source of isoflavone.
Keywords: Isoflavones; Malonylglycoside; Vegetable soybean; Cooked-with-rice soybean

Yeting Liu, Conrad O. Perera, Valiyaveettil Suresh, Comparison of three chosen vegetables with others from South East Asia for their lutein and zeaxanthin content, Food Chemistry, Volume 101, Issue 4, 2007, Pages 1533-1539, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.04.005.
(http://www.sciencedirect.com/science/article/B6T6R-4JSDPKT-4/2/022ecbfdac8d9573ad1eab10a717e09e)
Abstract:
Three local leafy vegetables chekup manis (Sauropus androgynus), West Indian pea tree leaves (Sesbania grandiflora (L.) Pers.), and drumstick tree leaves (Moringa oleifera), are consumed by local South East Asian populations and are believed to have beneficial effects on improved vision and prevention of eye diseases. High performance liquid chromatography equipped with photodiode array detection was used to investigate their lutein and zeaxanthin contents, which were compared with those from other commonly found vegetables in the region. It was found that these three leafy vegetables contained significantly higher amounts of lutein namely, 19.5, 28.3, and 24.8 mg/100 g edible fresh leaves, respectively, compared to other vegetables in the region. It was also found that cooking in boiling water increase the extractable lutein content in chekup manis by almost 20%, within 4 min.
Keywords: Lutein; Zeaxanthin; Chekup manis; West Indian pea; Drumstick; South East Asia

Marica Solina, Robert L. Johnson, Frank B. Whitfield, Effects of soy protein isolate, acid-hydrolysed vegetable protein and glucose on the volatile components of extruded wheat starch, Food Chemistry, Volume 104, Issue 4, 2007, Pages 1522-1538, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.02.031.
(http://www.sciencedirect.com/science/article/B6T6R-4N5TNGF-5/2/b99d45428b54d201d90343eea131da20)
Abstract:
The volatile components produced in wheat starch containing 1% soy protein isolate (SPI), and wheat starch/1% SPI combined with 1% glucose, 1% acid-hydrolysed vegetable protein (aHVP), or 1% glucose and 1% aHVP, extruded under different processing conditions (temperatures of 150 or 180 [degree sign]C and moisture content of 16% or 20%), were identified by gas chromatography-mass spectrometry (GC-MS). Gas chromatography olfactometry (GCO) was used to assess the odour intensity of volatile components present in the starch/glucose/SPI and starch/glucose/SPI/aHVP extrudates obtained at 180 [degree sign]C. In total, 94 compounds were identified in the eight extrudates. The smallest number (31) was found in the extrudate of the starch/glucose/SPI feedstock processed at 150 [degree sign]C and the largest (64) in the extrudate of the starch/SPI feedstock processed at 180 [degree sign]C. Lipid degradation products, such as alkanals, 2-alkanones, 2-alkenals and 2,4-alkadienals, were present in all extrudates in significant quantities. Strecker aldehydes were also present in all extrudates; however, in those extrudates containing aHVP, these compounds were quantitatively the dominant components. Maillard reaction products, such as pyrroles, pyrazines and oxazoles, were mainly found in extrudates containing aHVP whereas sulphur-containing aliphatic compounds were found in all extrudates. The production of the Maillard reaction products and sulphur-containing compounds was favoured by extrusion at 180 [degree sign]C. Sensory analyses showed that each of the eight extrudates had different odours, and that the extrudates containing both glucose and

aHVP possessed the highest overall odour intensity. In addition, SPI was found to have a modifying effect on the volatile content and odour of extrudates also containing glucose and aHVP.
Keywords: Extrusion; Soy protein isolate; Acid-hydrolysed vegetable protein; Glucose; Starch; Odour; Volatiles; GC-MS analyses

Pedro Elez-Martinez, Olga Martin-Belloso, Effects of high intensity pulsed electric field processing conditions on vitamin C and antioxidant capacity of orange juice and gazpacho, a cold vegetable soup, Food Chemistry, Volume 102, Issue 1, 2007, Pages 201-209, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.04.048.
(http://www.sciencedirect.com/science/article/B6T6R-4KBVX22-1/2/aa0f2fe16ec3aaf3a18c0dde912992da)
Abstract:
Orange juice and gazpacho, a cold vegetable soup, were submitted to high intensity pulsed electric fields (HIPEF). The effects of electric field strength, treatment time, pulse frequency, width and polarity, as process parameters, on vitamin C retention and antioxidant capacity of both products were evaluated and compared to those in a heat pasteurization. Vitamin C was determined by HPLC and antioxidant capacity through the inhibition of the DPPH (1,1-diphenyl-2-picrylhydrazyl) radical. Orange juice and gazpacho retained a 87.5-98.2% and 84.3-97.1% of vitamin C, respectively, after HIPEF treatments. Pulses applied in bipolar mode, as well as a lower electric field strength, treatment time, pulse frequency and width, led to higher levels of vitamin C retention ($p < 0.05$). HIPEF-treated orange juice and gazpacho always showed a vitamin C retention higher than that of the heat-pasteurized products. There were no differences ($p < 0.05$) in antioxidant capacity between HIPEF-treated and untreated products, whereas heat-treated foods showed lower values of antioxidant capacity.
Keywords: High intensity pulsed electric fields; Orange juice; Gazpacho; Vitamin C; Antioxidant capacity

A. Safavi, A.R. Banazadeh, Catalytic determination of traces of oxalic acid in vegetables and water samples using a novel optode, Food Chemistry, Volume 105, Issue 3, 2007, Pages 1106-1111, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.05.007.
(http://www.sciencedirect.com/science/article/B6T6R-4NRK4PR-1/2/b7ee60427de584e97499de695babe90b)
Abstract:
A new optode has been introduced for determination of oxalic acid. The optode sensing reagent is Victoria blue 4R which is immobilized on triacetylcellulose membrane. This reagent could be oxidized by dichromate in acidic media resulting in decoloration of the membrane. Oxalic acid has a strong catalytic effect on this reaction. The difference in absorbance of the immobilized form of Victoria blue 4R at 615 nm between uncatalyzed and catalyzed reactions ([Delta]A) is directly proportional to the concentration of oxalic acid. Oxalic acid can be determined in the concentration range of 2-180 [mu]g ml-1. The effect of different possible interfering species has been examined and was shown that the optode has a very good selectivity. The optode has been applied for the determination of oxalic acid in different real samples such as spinach, beet root, mushroom and river water with excellent recoveries.
Keywords: Oxalate determination; Vegetables; Water; Optode; Catalytic

Marica Solina, Robert L. Johnson, Frank B. Whitfield, Effects of glucose and acid-hydrolysed vegetable protein on the volatile components of extruded wheat starch, Food Chemistry, Volume 100, Issue 2, 2007, Pages 678-692, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.10.021.
(http://www.sciencedirect.com/science/article/B6T6R-4HVF12C-1/2/96bda7ea0e1c1de878d7240caf59e500)
Abstract:

The volatile components produced in wheat starch, and wheat starch combined with 1% glucose, 1% acid-hydrolysed vegetable protein (aHVP) or 1% glucose and 1% aHVP, extruded under different processing conditions (temperatures of 150 or 180 [degree sign]C and moisture content of 16% or 20%) were identified by gas chromatography-mass spectrometry (GC-MS). Gas chromatography olfactometry (GCO) was used to assess the odour intensity of volatile components present in the starch and starch/glucose/aHVP extrudates obtained at 180 [degree sign]C. In total, 70 compounds were identified in the eight extrudates. The smallest number (24) was found in the extrudate of the starch/glucose mixture and the largest number (67) in the extrudate of the starch/glucose/aHVP mixture, both processed at 180 [degree sign]C. Lipid degradation products, such as alkanals, 2-alkanones, 2-alkenals and 2,4-alkadienals, were present in all extrudates in significant quantities. However, in those extrudates containing aHVP, Strecker aldehydes were quantitatively the dominant components. Maillard reaction products, such as pyrroles and pyrazines, were only found in extrudates containing both glucose and aHVP whereas sulphur-containing aliphatic compounds were found in all extrudates containing aHVP. The production of the Maillard reaction products and sulphur-containing compounds were favoured by extrusion at 180 [degree sign]C. Sensory analyses showed that each of the eight extrudates had different odours, and that the extrudates containing both glucose and aHVP possessed the highest overall odour intensity.
Keywords: Extrusion; Glucose; Acid-hydrolysed vegetable protein; Starch; Odour; Volatiles; Non-volatiles

Margherita Rossi, Cristina Alamprese, Simona Ratti, Tocopherols and tocotrienols as free radical-scavengers in refined vegetable oils and their stability during deep-fat frying, Food Chemistry, Volume 102, Issue 3, 2007, Pages 812-817, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.06.016.
(http://www.sciencedirect.com/science/article/B6T6R-4KKNNGP-6/2/f3ff10c7ef0fd6eb89de174d3cba31b3)
Abstract:
The aim of this study was to assess the effect of total tocopherols and tocotrienols of refined vegetable oils on oil radical-scavenging activity and to investigate the stability of the various homologues during the deep-fat frying of French fries. Eight different refined vegetable oils were investigated, having variable levels of natural tocopherols and tocotrienols. A direct correlation between the radical-scavenging capacity of the oils, measured by the DPPH test, and the total content of natural tocopherols and tocotrienols was found. Frying experiments showed that the stability of the different tocopherols and tocotrienols present in the refined vegetable oils basically depend on two factors: the fatty acid composition of the oil, in particular polyunsaturated fatty acid content, and the kind of tocopherol and tocotrienol homologues present. The more oxidizable the oil, on the basis of fatty acid composition, the more stable were the tocopherolic antioxidants. Among the different homologues, [gamma]-tocotrienol in palm super olein proved to be the least stable during the deep-fat frying, thus preserving the other homologues.
Keywords: Antioxidants; Deep-fat frying; DPPH; Radical-scavenging activity; Refined oils; Tocopherols; Tocotrienols

Marisiddaiah Raju, Sadineni Varakumar, Rangaswamy Lakshminarayana, Thirumalai Parthasarathy Krishnakantha, Vallikannan Baskaran, Carotenoid composition and vitamin A activity of medicinally important green leafy vegetables, Food Chemistry, Volume 101, Issue 4, 2007, Pages 1598-1605, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.04.015.
(http://www.sciencedirect.com/science/article/B6T6R-4JV448W-4/2/b25f4978c6404a5e964cf29c4760af12)
Abstract:

Carotenoid composition of green leafy vegetables (GLVs, n = 30) with medicinal value was analyzed by HPLC; vitamin A activity (as retinol equivalent, RE) of provitamin A carotenoids was calculated. Results show that among GLVs studied, the level of [beta]-carotene (50-130 mg/100 g dry wt) was higher in nine GLVs than other carotenoids while lutein (50-187 mg/100 g dry wt) and zeaxanthin (1-5 mg/100 g dry wt) were higher in 12 GLVs than other xanthophylls. [alpha]-Carotene was detected only in nine GLVs, ranging from 1 to 37 mg/100 g dry wt. Interestingly, Chenopodium album, Commelina benghalensis and Solanum nigrum were found to contain higher levels of both lutein and [beta]-carotene in the range of 84-187 and 50-115 mg/100 g dry wt, respectively. The values of retinol equivalents (RE) ranged from 641 to 19101 and were higher (>10,000) in six GLVs of the 30. The results demonstrate that GLVs studied contained higher levels of RE and lutein.
Keywords: Leafy vegetables; Carotenoids; Vitamin A activity; Chromatography

Zhiliang Huang, Baowu Wang, Doris H. Eaves, James M. Shikany, Ralphenia D. Pace, Phenolic compound profile of selected vegetables frequently consumed by African Americans in the southeast United States, Food Chemistry, Volume 103, Issue 4, 2007, Pages 1395-1402, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.10.077.
(http://www.sciencedirect.com/science/article/B6T6R-4MM268T-2/2/e2598d79a2bda7ab44dc1fac73511df9)
Abstract:
The phenolic composition of vegetables commonly consumed by African Americans in the southeast United States was analyzed with HPLC-MS. The vegetable samples included collard greens, mustard greens, kale, okra, sweet potato greens, green onion, butter beans, butter peas, purple hull peas, rutabagas, eggplant, and purslane. Five compounds out of total 29 peaks detected from the 12 samples - caffeic acid, ferulic acid, quercetin, kaempferol, and isorhamnetin - were identified. No gallic acid, p-coumaric acid, myricetin, luteolin, apigenin, hesperetin, naringenin, or flavanols was detected. The major flavonoids were isorhamnetin, quercetin and kaempferol. Isorhamnetin was found in kale, mustard greens, and purslane. The content ranged from 2.8 to 23.6 mg/100 g fresh edible part. Quercetin was found in collard greens, mustard greens, kale, okra, sweet potato greens, purple hull peas, and purslane. The content ranged from 1.3 to 31.8 mg/100 g with the highest content in kale and lowest content in purslane. Kaempferol was found in collard greens, mustard greens, kale, sweet potato greens, green onion, and purslane. The content ranged from 1.1 to 90.5 mg/100 g. Caffeic acid was only found in sweet potato greens. Ferulic acid was found in collard greens, mustard greens, kale, okra, purple hull peas, and purslane. Although some peaks were found in eggplant, butter beans, butter peas and rutabagas, these peaks were not identified due to lack of reference compound and no flavonoid or phenolic acid was quantified in these samples. The results suggest that these indigenous vegetables among African Americans are good sources of the phenolic compounds, which can be useful for the prevention of cardiovascular and other chronic diseases.
Keywords: Phenolic compound; Vegetables; HPLC-MS; African Americans

M. Atif Randhawa, F. Muhammad Anjum, Anwaar Ahmed, M. Saqib Randhawa, Field incurred chlorpyrifos and 3,5,6-trichloro-2-pyridinol residues in fresh and processed vegetables, Food Chemistry, Volume 103, Issue 3, 2007, Pages 1016-1023, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.10.001.
(http://www.sciencedirect.com/science/article/B6T6R-4MD95BV-5/2/e2144d48cd563c8fa41002f6d696a0aa)
Abstract:
The effect of washing, peeling and cooking on residue levels of chlorpyrifos and 3,5,6-trichloro-2-pyridinol (TCP) in winter (spinach, cauliflower, potato) and summer vegetables (eggplant, tomato, okra) was determined. Analysis was carried out by capillary gas chromatography (DB-5MS

capillary column) with mass selective detection. The samples were collected from trials conducted under controlled conditions as well as from the farmer's field. In supervised field trials, the highest chlorpyrifos residue was found at raw stage in spinach (1.87 mg kg-1) followed by okra (1.41 mg kg-1) and eggplant (1.25 mg kg-1). The lowest residue of chlorpyrifos was recorded in cauliflower (0.036 mg kg-1). The chlorpyrifos residue reduced from 15 to 33% after washing, 65-85% post-peeling and cooking further lowered it from 12% to 48% in all the tested vegetables; while an increase in TCP concentration was observed during heat treatment. Out of 267 vegetable samples collected from the farmer's field, 225 samples contained detectable residues representing 84% rate of contamination. About 6% of samples contained chlorpyrifos residues above maximum residue limits (MRLs). However, vegetable processing reduced the chlorpyrifos residue below the MRL.
Keywords: Chlorpyrifos; TCP; Vegetables; Household processing; Supervised field trial; Farmer field

K. Suvardhan, K. Suresh Kumar, D. Rekha, K. Kiran, B. Jaya raj, G. Krishna murthy Naidu, P. Chiranjeevi, RETRACTED: Selenium determination in various vegetable samples by spectrophotometry, Food Chemistry, Volume 103, Issue 3, 2007, Pages 1044-1048, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.07.059.
(http://www.sciencedirect.com/science/article/B6T6R-4M340H4-2/2/5ad2d7d5e3da8bee1775e2c0ff43d7ec)
Abstract:
This article has been retracted at the request of the Editor-in-Chief. Please see Elsevier Policy on Article Withdrawal (http://www.elsevier.com/locate/withdrawalpolicy).
Reason: Considerable concern was raised about the research purportedly conducted at Sri Venkateswara University, India with the alleged involvement of Professor P. Chiranjeevi.
Questions were raised as to the volume of publications, the actual capacity (equipment, orientation and chemicals) of the laboratory in which Professor Chiranjeevi worked, the validity of certain of the research data identified in the articles, the fact that a number of papers appear to have been plagiarized from other previously published papers, and some aspects of authorship.
Professor Chiranjeevi was given the opportunity to respond to these allegations. Thereafter, a committee was constituted by the University to look into these allegations. Based on the enquiry committee report, we have been informed by the head of the Department of Chemistry at Sri Venkateswara University that the university authorities have taken disciplinary action against ProfessorChiranjeevi, as the university considers that there are grounds for such action.
Therefore, based on the results of this investigation, the Editor is retracting this article.

Peng-Peng Hao, Jin-Ren Ni, Wei-Ling Sun, Wen Huang, Determination of tertiary butylhydroquinone in edible vegetable oil by liquid chromatography/ion trap mass spectrometry, Food Chemistry, Volume 105, Issue 4, 2007, Pages 1732-1737, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2007.04.058.
(http://www.sciencedirect.com/science/article/B6T6R-4NSX08G-5/2/2c8744f67c237fec6df8588ac362de90)
Abstract:
A simple, sensitive and accurate analytical method for quantification of tertiary butylhydroquinone (TBHQ) in edible vegetable oil was established by liquid chromatography/ion trap mass spectrometry (LC/ITMS). After extraction, 5 [mu]l of the extracts was directly injected into LC/ITMS for TBHQ determination. Ethanol was selected as the extraction solvent. The optimized fragmentation amplitude was 1.70 V and electrospray ionization (ESI) was more suitable than atmospheric pressure chemical ionization (APCI) for TBHQ detection. The calibration curve showed good linearity (R2 = 0.9990) and recoveries from spiked samples ranged from 81.9% to 110.5%. Relative standard deviations of intra-day and inter-day were in the ranges 2.5-5.7% and

3.9-13.8%, respectively. The procedure allows the detection of 0.3 mg/kg TBHQ in edible vegetable oil. Typical edible vegetable oils in the market were detected for TBHQ by the proposed method. As results, TBHQ was detected in blend oil, soybean salad oil and camellia oil samples.
Keywords: Tertiary butylhydroquinone (TBHQ); Liquid chromatography/ion trap mass spectrometry (LC/ITMS); Quantitative determination

E. Sabah, M. Cinar, M.S. Celik, Decolorization of vegetable oils: Adsorption mechanism of [beta]-carotene on acid-activated sepiolite, Food Chemistry, Volume 100, Issue 4, 2007, Pages 1661-1668, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.12.052.
(http://www.sciencedirect.com/science/article/B6T6R-4JCSMD8-2/2/392d50300e9c4e23c8c87f3508994d39)
Abstract:
The adsorption behaviour of acid-activated sepiolite (AAS) for the removal of [beta]-carotene (C40H56) from rapeseed oil was studied as a function of different sepiolite dosages and bleaching temperatures. The [beta]-carotene level in the oil was reduced from 42.3 to 1.60 mg/kg under the optimum conditions of 100 [degree sign]C bleaching temperature and 1.5% sepiolite dosage. A thermodynamic analysis involving the Langmuir and Freundlich models was applied to identify the mode and extent of [beta]-carotene adsorption. While the negative values of free energy of adsorption indicate the spontaneity of adsorption, much larger values of the change in standard entropy compared to the enthalpy of adsorption reveal that the reaction is entropically driven and physical in nature. Acid-activated sepiolite exhibits weak acid, low acidity and absolute low zeta potential values, all of which suggest the dominance of Lewis acid centres on the AAS surface. The mechanism of incorporation of [beta]-carotene molecules was examined by calculating its packing area through molecular considerations. It is suggested that [beta]-carotene molecules adsorb both directly on the meso-external surface of AAS and penetrate intra-crystalline channels and tunnels. The pore size distribution of sepiolite confirms this assertion.
Keywords: Adsorption; Bleaching; [beta]-Carotene; Sepiolitel; Clay

Jimaima Lako, V. Craige Trenerry, Mark Wahlqvist, Naiyana Wattanapenpaiboon, Subramanium Sotheeswaran, Robert Premier, Phytochemical flavonols, carotenoids and the antioxidant properties of a wide selection of Fijian fruit, vegetables and other readily available foods, Food Chemistry, Volume 101, Issue 4, 2007, Pages 1727-1741, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.01.031.
(http://www.sciencedirect.com/science/article/B6T6R-4JDVP74-7/2/f52d41842afdc962f6a8ccfa011209e8)
Abstract:
Frequent consumption of fruits and vegetables is associated with a lowered risk of cancer, heart disease, hypertension and stroke. This has been attributed to the presence of various forms of phytochemicals and antioxidants present in the foods, e.g. carotenoids and polyphenol compounds including flavonoids and anthocyanins. Seventy Fiji grown fruits and vegetables, and some other commonly consumed products, were analysed for their total antioxidant capacity (TAC), total polyphenol content (TPP), total anthocyanin content (TAT) as well as the major flavonol and carotenoid profiles. These data will be used to estimate the phytochemical and antioxidant intake of the Fijian population and will be a useful tool in future clinical trials.
Green leafy vegetables had the highest antioxidant capacity, followed by the fruits and root crops. A number of herbs also exhibited high antioxidant capacity. Ipomoea batatas (sweet potato) leaves have the highest TAC (650 mg/100 g) and are rich in TPP (270 mg/100 g), quercetin (90 mg/100 g) and [beta]-carotene (13 mg/100 g). Moringa oleifera (drumstick) leaves also have a high TAC (260 mg/100 g) and are rich in TPP (260 mg/100 g), quercetin (100 mg/100 g), kaempferol (34 mg/100 g) and [beta]-carotene (34 mg/100 g). Curcuma longa (turmeric ginger) has a high TAC (360 mg/100 g), TPP (320 mg/100 g) and is rich in fisetin (64 mg/100 g), quercetin (41 mg/100 g)

and myricetin (17 mg/100 g). Zingiber officinate (white ginger) also has a high TAC (320 mg/100 g) and TPP (200 mg/100 g). Zingiber zerumbet (wild ginger), a widely used herb taken before meals is the richest source of kaempferol (240 mg/100 g).
Keywords: Phytochemicals; Flavonols; Carotenoids; Antioxidant capacity; Food; Fiji

L. Fernando Reyes, J. Emilio Villarreal, Luis Cisneros-Zevallos, The increase in antioxidant capacity after wounding depends on the type of fruit or vegetable tissue, Food Chemistry, Volume 101, Issue 3, 2007, Pages 1254-1262, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.03.032.
(http://www.sciencedirect.com/science/article/B6T6R-4JKRH60-1/2/dd38aca22b489c44186ed289a270d36d)
Abstract:
Wounding of fresh produce may elicit an increase in antioxidant capacity associated with wound-induced phenolic compounds. However, there have been no reports on the wounding response of different types of fresh produce. Changes in antioxidant capacity, total soluble phenolics, ascorbic acid, total carotenoids and total anthocyanins were evaluated after wounding in zucchini, white and red cabbage, iceberg lettuce, celery, carrot, parsnips, red radish, sweetpotato and potatoes. Phenolic changes ranged from a 26% decrease to an increase up to 191%, while antioxidant capacity changes ranged from a 51% decrease to an increase up to 442%. Reduced ascorbic acid decreased up to 82%, whereas the changes in anthocyanins and carotenoids were less evident. In general, the wound response was dependent on the type of tissue and influenced by the initial levels of reduced ascorbic acid and phenolic compounds. Wounding may increase the antioxidant content towards the development of selected healthier fresh-cut produce.
Keywords: Wounding; Antioxidant capacity; Phenylalanine ammonia lyase activity; Phenolic compounds; Ascorbic acid; Reactive oxygen species

T. Thriveni, J. Rajesh Kumar, D. Sujatha, N.Y. Sreedhar, Voltammetric determination of the herbicides nitralin and oryzalin in agricultural formulations, vegetables and grape juice samples, Food Chemistry, Volume 104, Issue 3, 2007, Pages 1304-1309, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2006.10.014.
(http://www.sciencedirect.com/science/article/B6T6R-4MNYK1R-1/2/6d26bc718b9325a5e7b12811fbef7f72)
Abstract:
A sensitive method for the determination of the herbicides nitralin and oryzalin by adsorptive stripping voltammetry (AdSV) at a hanging mercury drop electrode (HMDE) (pH 6.0) was described. The cyclic voltammograms demonstrate the adsorption of these compounds at the mercury electrode. A symmetric study of the various operational parameters that affect the stripping response was carried out by differential pulse voltammetry. With an accumulation potential of -0.5 V and a 80 s accumulation time, the limit of detection was 2.47 x 10-8 mol/L and 1.5 x 10-8 mol/L, the relative standard deviation (n = 10), correlation coefficient values 1.14%, 0.998, 1.48%, 0.999 at concentration levels of 8.3 x 10-8 mol/L to 1.5 x 10-6 mol/L and 2 x 10-8 mol/L to 1.0 x 10-5 mol/L for both compounds. The degree of interference of some other pesticides on the differential pulse adsorptive stripping signal for nitralin and oryzalin was evaluated. Finally the proposed method was applied for determination of nitralin and oryzalin in agricultural formulations, vegetables and grape juice samples.
Keywords: DP-AdSV determination; Nitralin; Oryzalin; Formulations; Vegetables and grape juice samples

Hyun-Pa Song, Myung-Woo Byun, Cheorun Jo, Cheol-Ho Lee, Kyong-Soo Kim, Dong-Ho Kim, Effects of gamma irradiation on the microbiological, nutritional, and sensory properties of fresh vegetable juice, Food Control, Volume 18, Issue 1, January 2007, Pages 5-10, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2005.07.013.

(http://www.sciencedirect.com/science/article/B6T6S-4H74M1J-1/2/f32537c3c520b839ebb3476e99e5ebdf)
Abstract:
The radiation pasteurization process was performed to improve the microbiological quality of fresh vegetable juice. Carrot and kale juice were irradiated and their microbiological, nutritional, and sensory properties were evaluated. The contaminating bacteria in the juices before irradiation ranged from 106 to 107 CFU/ml. All the aerobic and coliform bacteria in the carrot juice were eliminated by irradiation at a dose of 3 kGy, whereas about 102 CFU/ml of the bacteria survived in the kale juice irradiated at up to 5 kGy. However, the cells that survived from irradiation in the kale juice did not grow, whereas those of the non-irradiated samples reached 109 CFU/ml after 3 days of storage at 10 [degree sign]C. Amino acids were stable at up to 5 kGy of an irradiation. Radiation resulted in a dose-dependent reduction of the ascorbic acid content. However, the contents of the total ascorbic acid, including dehydroascorbic acid, were stable at up to 3 kGy of an irradiation. The sensory evaluation results immediately after irradiation were not different in any of the samples. At a 3-day storage, the sensory quality of the irradiated juice was adequate, while the quality of the non-irradiated control was deteriorated.
Keywords: Gamma irradiation; Carrot; Kale; Vegetable juice

David Perez-Martinez, C. Alvarez-Salas, M. Charo-Alonso, E. Dibildox-Alvarado, J.F. Toro-Vazquez, The cooling rate effect on the microstructure and rheological properties of blends of cocoa butter with vegetable oils, Food Research International, Volume 40, Issue 1, January 2007, Pages 47-62, ISSN 0963-9969, DOI: 10.1016/j.foodres.2006.07.016.
(http://www.sciencedirect.com/science/article/B6T6V-4M21SX3-1/2/3d84223c7279715aa498c66843f62ed8)
Abstract:
The elasticity (G') and yield stress ([sigma]*) of blends of cocoa butter (CB) in vegetable oils (i.e., 30% CB/canola and 30% CB/soybean oil) crystallized at temperatures (TCr) between 9.5 [degree sign]C and 13.5 [degree sign]C and two cooling rates (1 [degree sign]C/min and 5 [degree sign]C/min) were determined, evaluating their relationship with parameters associated with the formation and structural organization of the crystal network [i.e., solid fat content (SFC), Avrami index, crystallization rate, fractal dimension (D)]. The results showed that TCr and cooling rate had a different effect for each blend on the three-dimensional organization of the crystal network, and on the proportion and size of [beta]' and [beta] crystals. Thus, under low supercooling conditions at both cooling rates, the crystallized CB/canola oil blend was formed by a mixture of small [beta]' and large [beta] crystals that provided high G' and [sigma]* at low SFC (i.e., 20.5-20.9%) and D (i.e., 1.66-1.72) values. The CB/soybean oil blend achieved similar G' and [sigma]* independent of cooling rate only at high supercooling. In this case, the crystal network was formed mainly by small [beta]' crystals with SFC (i.e., 25.4-26.3%) and D (i.e., 2.86-2.79) values higher ($P < 0.05$) than in the CB/canola oil blend at low supercooling.
Keywords: Cooling rate; Cocoa Butter; Rheometry; Fractals; Microstructure

M. Izadifar, M. Zolghadri Jahromi, Application of genetic algorithm for optimization of vegetable oil hydrogenation process, Journal of Food Engineering, Volume 78, Issue 1, January 2007, Pages 1-8, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.08.044.
(http://www.sciencedirect.com/science/article/B6T8J-4H998RV-2/2/bd4c81b5fccc8ca5b6b9d13ac292d2aa)
Abstract:
Finding optimal reaction conditions leading to minimal total trans isomer and maximal cis-oleic acid formation during vegetable oil hydrogenation is very crucial. An Artificial Neural Network was developed and used to predict the amount of total trans isomer and cis-oleic acid during the hydrogenation process. Using a large number of experimental data from a pilot plant reactor, the

Neural Network was trained and then validated with a validation subset. Having a reasonably accurate Neural Network model of the hydrogenation process, Genetic Algorithm was then used to search for a combination of process variables resulting in minimal total trans isomer and maximal cis-oleic acid formation during the hydrogenation process. The outputs of Genetic Algorithm (i.e. predicted process variables) were used in actual settings of the hydrogenation process to evaluate the effectiveness of the scheme. The results indicated that the scheme could be effectively used to identify the optimal hydrogenation conditions resulting in minimal trans isomer and maximal cis-oleic acid formation during vegetable oil hydrogenation process.
Keywords: Genetic algorithm; Modeling; Neural network; Optimization; trans isomer; Vegetable oil hydrogenation

Jayde Hanson, Martin Bell, Harvest trails in Australia: Patterns of seasonal migration in the fruit and vegetable industry, Journal of Rural Studies, Volume 23, Issue 1, January 2007, Pages 101-117, ISSN 0743-0167, DOI: 10.1016/j.jrurstud.2006.05.001.
(http://www.sciencedirect.com/science/article/B6VD9-4KFMM95-1/2/742f20bdf2245bad75cca9293fa9dca4)
Abstract:
Against a background of declining employment in agriculture, a mobile workforce plays a crucial role in meeting seasonal labour demand in Australia. The dynamics of this labour force have received surprisingly little attention. We situate seasonal migration within the rising diversity of present-day mobility, and capture images of its early history in Australia. Statistical and documentary sources provide a basis to illustrate patterns of demand for seasonal labour and estimate the size of the workforce. Drawing on fieldwork in three case study regions of Queensland, we then seek to establish the composition of the seasonal workforce, identify their motives for undertaking seasonal work, and discover their harvest trails. Combining these data generates a typology that distinguishes key groups. Our results point to a fall in the numbers of Permanent Itinerants compensated by a sharp rise in Retirees and Working Holiday Makers from Overseas, each with distinctive spatial circuits. We argue that consumption motives play a growing role in the dynamics of seasonal labour mobility, and identify an emerging organisational apparatus that shapes and controls the industry. Drawing on the experience of other developed countries with more open labour markets, we anticipate continuing transformation in seasonal labour dynamics.

Anna Podsedek, Natural antioxidants and antioxidant capacity of Brassica vegetables: A review, LWT - Food Science and Technology, Volume 40, Issue 1, January 2007, Pages 1-11, ISSN 0023-6438, DOI: 10.1016/j.lwt.2005.07.023.
(http://www.sciencedirect.com/science/article/B6WMV-4H9PNDF-1/2/155969f0cb6c0152202b37c33eac0eea)
Abstract:
Dietary antioxidants, such as water-soluble vitamin C and phenolic compounds, as well as lipid-soluble vitamin E and carotenoids, present in vegetables contribute both to the first and second defense lines against oxidative stress. As a result, they protect cells against oxidative damage, and may therefore prevent chronic diseases, such as cancer, cardiovascular disease, and diabetes. Brassica vegetables, which include different genus of cabbage, broccoli, cauliflower, Brussels sprouts, and kale, are consumed all over the world. This review focuses on the content, composition, and antioxidant capacity both lipid- and water-soluble antioxidants in raw Brassica vegetables. The effects of post-harvest storage, industrial processing, and different cooking methods on stability of bioactive components and antioxidant activity also are discussed.
Keywords: Brassica vegetables; Antioxidant vitamins; Phenolic compounds; Antioxidant activity

Nadege Richard, Gabriel Mourente, Sadasivam Kaushik, Genevieve Corraze, Replacement of a large portion of fish oil by vegetable oils does not affect lipogenesis, lipid transport and tissue lipid uptake in European seabass (Dicentrarchus labrax L.), Aquaculture, Volume 261, Issue 3, 1 December 2006, Pages 1077-1087, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2006.07.021.
(http://www.sciencedirect.com/science/article/B6T4D-4KFMCHG-3/2/3692f66a13687c3a468a1773e21f4a09)
Abstract:
In order to investigate the impact of dietary lipid sources on mechanisms involved in lipid deposition, three groups of European seabass fingerlings with average initial body weight of 5.2 +/- 1.0 g were fed three diets differing only by lipid source. These diets were: 100% anchovy oil (diet A), 40% anchovy oil-60% mix of vegetable oils (35% linseed, 15% palm, 10% rapeseed) (diet B) and 40% anchovy oil-60% mix of vegetable oils (24% linseed, 12% palm, 24% rapeseed) (diet C). After 64 weeks of rearing, when seabass reached the size of 160 g, the activity of lipogenic enzymes (fatty acid synthetase, glucose-6-phosphate dehydrogenase and malic enzyme) in liver and of lipoprotein lipase (LPL) in perivisceral adipose tissue, liver and white muscle were measured. Transport of lipid by lipoproteins was examined by determining plasma lipid composition and lipoprotein classes. Dietary oil source did not modify growth performance or lipid content of flesh and liver of seabass. Replacement of 60% of fish oil by the two mixtures of vegetable oils had no significant effect on hepatic lipogenesis and activity of LPL in liver and adipose tissue. Activity of LPL in white muscle was decreased in fish fed diet C compared to those fed diets A and B. Diets containing the mixture of vegetable oils led to lowered plasma, VLDL and LDL cholesterol levels compared to diet A.
It is concluded that replacing 60% of fish oil by the two mixtures of vegetable oils in the feeds of European seabass fingerlings until they reach the size of 160 g has no marked effect on growth performance, lipogenesis and tissue lipid uptake but has a hypocholesterolemic effect.
Keywords: Fish oil; Lipogenesis; Lipoprotein lipase; Lipoproteins; European seabass; Vegetable oils

Frederic Carlin, Jongen, W. (Ed.), Improving the Safety of Fresh Fruits and Vegetables, Woodhead Publishing Ltd., (Cambridge, 2005) 639pp; price [pound sign] 150, $ 270, [euro] 220., Food Microbiology, Volume 23, Issue 8, December 2006, Page 814, ISSN 0740-0020, DOI: 10.1016/j.fm.2006.03.006.
(http://www.sciencedirect.com/science/article/B6WFP-4JRK61S-1/2/69f9ffc8073258efa687072a0ff25071)

Mohamed Fawzy Ramadan, Joerg-Thomas Moersel, Screening of the antiradical action of vegetable oils, Journal of Food Composition and Analysis, Volume 19, Issue 8, December 2006, Pages 838-842, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.02.013.
(http://www.sciencedirect.com/science/article/B6WJH-4JWMF95-1/2/0e15ac78cb1856b7c4ebe86dbb805897)
Abstract:
Information on radical scavenging activity (RSA) and antioxidant potential of vegetable oils are not reported, or reporting has been rather limited. Such data is of importance for the evaluation of nutritional and health impact of these oils. The main objective of this short study was to compare the antiradical performance of some common and unusual vegetable oils. The described arrangement for our simple experiment uses the addition of stable radicals 1,1-diphenyl-2-picrylhydrazyl (DPPH) to vegetable oils, which are decomposed by components having antioxidant properties. The order of effectiveness of oils in inhibiting free radicals was as follows: coriander>blackcumin>cottonseed>peanut>sunflower>walnut>hemp seed>linseed>olive>niger seed. This initial survey might serve as a springboard for future research into this area.
Keywords: Vegetable oils; Radical scavenging activity; DPPH

Milan Houska, Jan Strohalm, Katerina Kocurova, Jiri Totusek, Danuse Lefnerova, Jan Triska, Nadezda Vrchotova, Vlasta Fiedrleova, Maria Holasova, Dana Gabrovska, Ivana Paulickova, High pressure and foods--fruit/vegetable juices, Journal of Food Engineering, Volume 77, Issue 3, Special Section: CHISA 2004 (pp. 379-471), December 2006, Pages 386-398, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.07.003.
(http://www.sciencedirect.com/science/article/B6T8J-4H57JCD-1/2/94a6aa6c7a38842f546ca6680740bdb8)
Abstract:
The high pressure pasteurisation is capable to preserve the nutritional substances in juices such as sulforaphane in broccoli juice. This paper deals with the procedures how to maintain the highest content of this compound and other nutritional substances and how to prepare the consumer acceptable form of this juice. The final product--the apple-broccoli juice functional food (food supplement) was experimentally produced and tested. The high pressure pasteurisation process (500 MPa for 10 min) is capable to inactivate more than 5 log decades of the viable microorganisms present originally in the raw juice and product is free of coli-form bacteria, yeast, moulds and salmonella during 30 days of storage at the chilled room temperature conditions (temperature up to 5 [degree sign]C). The high-pressure treated broccoli juices are comparable in sulforaphane content and anti-mutagenic activity with frozen version. Freezing of the broccoli before juicing decreased sulforaphane formation. The content of vitamin C depends on the holding time of the pressurisation, but it is independent of pressure level. The sensory quality of the high pressure treated apple-broccoli juice is comparable with frozen juice up to the 70 days of the storage.
Keywords: High-pressure pasteurisation; Foods; Broccoli juice; Sulforaphane; Anti-mutagenicity

Jaroslav Dobias, Michal Voldrich, Dusan Curda, Heating of canned fruits and vegetables: Deaeration and texture changes, Journal of Food Engineering, Volume 77, Issue 3, Special Section: CHISA 2004 (pp. 379-471), December 2006, Pages 421-425, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.07.008.
(http://www.sciencedirect.com/science/article/B6T8J-4GYNXVF-4/2/6aaaa46eaffbdaa0da2c3a9585636f1a)
Abstract:
The effect of deaeration of apple and/or carrot during heating at 60 [degree sign]C-100 [degree sign]C for 20-60 min in packages with hermetic and non-hermetic closures on the texture changes of processed tissues was studied. In heated plant tissues the residual gas content was determined. The texture was evaluated using Instron apparatus, (model 5544, Instron Ltd. UK) by pressing of cylindrical samples of apple and/or carrot between two flat plates. The maximum stress and the modulus of elasticity for each sample were determined.
After all heat treatments the total content of free gas in fresh plant tissues decreased more in samples heated in non-hermetic packaging. The correlation between the amount of expelled gas and the texture loss of processed carrot and/or apple was found, the samples heated in the hermetic packaging provided lower texture deterioration.
Keywords: Canned fruits and vegetables; Deaeration; Texture; Packaging

Kequan Zhou, Liangli Yu, Total phenolic contents and antioxidant properties of commonly consumed vegetables grown in Colorado, LWT - Food Science and Technology, Volume 39, Issue 10, December 2006, Pages 1155-1162, ISSN 0023-6438, DOI: 10.1016/j.lwt.2005.07.015.
(http://www.sciencedirect.com/science/article/B6WMV-4H57TJV-1/2/bd4bd35f3e11ef19456e2847a62d29d0)
Abstract:

A total of 38 commonly consumed vegetable samples, including 3 kale, 1 rhubarb, 3 spinach, 3 broccoli, 2 green bean, 5 carrot, 10 tomato, and 11 potato samples, were investigated for their total phenolic contents (TPC) and antioxidant properties. The measured antioxidant properties included free radical scavenging activities against DPPH, superoxide anion radical (O2-), ABTS+ and peroxyl radical, and Fe2+ chelating capacity. The tested vegetables differed in their antioxidant properties and TPC, although all vegetables had significant antioxidant activities and contained significant levels of phenolics. The TPC and the measured antioxidant properties were correlated to each other. The Fe+2 chelating capacity and the scavenging capacities against ABTS+, DPPH and O2- were reported for these commonly consumed vegetables for the first time. Results from this study suggest that kale, spinach, broccoli, and rhubarb are the better dietary sources of natural antioxidant activities and phenolic compounds. Furthermore, kale, broccoli and spinach produced in Colorado may have greater antioxidant contents than those grown at other locations.
Keywords: Oxygen radical absorbance capacity; O2-; Antioxidant; Chelating; ABTS+; DPPH; Total phenolic content; Vegetable

Sissel Albrektsen, Harald Mundheim, Anders Aksnes, Growth, feed efficiency, digestibility and nutrient distribution in Atlantic cod (Gadus morhua) fed two different fish meal qualities at three dietary levels of vegetable protein sources, Aquaculture, Volume 261, Issue 2, 24 November 2006, Pages 626-640, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2006.08.031.
(http://www.sciencedirect.com/science/article/B6T4D-4KSH9V0-3/2/b2c8cf8a62258dd376f38bd87f3dc805)
Abstract:
Atlantic cod were fed six diets where the ratio of protein from fish meal to vegetable protein were varied from 91%, 67% to 46%, respectively. The experimental groups were performed in triplicate in a 20 week growth trial, increasing fish weight from about 167 g to 690 g. The vegetable protein sources constituted full-fat soybean meal and corn gluten meal at a fixed ratio of 1:2, and replaced either a high quality fish meal (DCMink 92.3%) or a lower quality fish meal (DCMink 85.6%) in the diet. All diets were extruded and balanced to be equal in gross energy, crude protein, lipid, carbohydrate, lysine and phosphorus. No difference in growth (SGR 1%) was observed comparing the two fish meal qualities. However, feed intake was significantly higher (9%) and feed efficiency lower (10%) for lower quality fish meal compared to high quality fish meal. Protein and amino acid digestibility was significantly reduced in the lower quality fish meal, while unaffected by vegetable protein inclusion for both fish meal qualities. Protein utilization as measured by protein efficiency ratio and net protein value was not affected by fish meal inclusion, except in the diet using lower quality fish meal and high vegetable protein inclusion. Lipid and energy digestibility was significantly reduced by vegetable protein inclusion for both fish meals. The lower fish meal quality increased lipid deposition in the liver and affected slaughter quality of cod by increasing HSI and dressing out percentage at low and intermediate substitution levels. Muscle composition showed small dietary changes except for arginine, while liver fatty acid composition clearly reflected fatty acid profile of full-fat soya in the diets. Corn gluten meal and full-fat soybean meal (2:1) can replace approximately 50% of dietary protein without affecting feed intake, growth, protein digestibility or slaughter quality of cod when exchanging high quality fish meal. For the lower quality fish meal diets some lower inclusion of vegetable protein sources seem to be acceptable.
Keywords: Fish meal; Full-fat soybean meal; Corn gluten meal; Cod; Growth performance; Digestibility; Protein; Energy; Amino acids

Gregory A. Jones, Kathryn E. Sieving, Intercropping sunflower in organic vegetables to augment bird predators of arthropods, Agriculture, Ecosystems & Environment, Volume 117, Issues 2-3, November 2006, Pages 171-177, ISSN 0167-8809, DOI: 10.1016/j.agee.2006.03.026.

(http://www.sciencedirect.com/science/article/B6T3Y-4JW11WF-4/2/553a61e4230b855976ef98df12910e5d)
Abstract:
Field experiments were used to test whether intercropping sunflower (Helianthus annuus) in organic vegetables would (1) attract insect-eating birds and encourage them to (2) forage in greater numbers and (3) for more time in cropped fields. Cropped areas with sunflower treatments of one or two rows per 0.4 ha exhibited significantly greater mean abundance of insectivorous birds than did control plots, across a variety of crop types. Additionally, both mean numbers of individual birds foraging on insect prey and mean insect-foraging time per hour in crops were significantly greater in plots with sunflower rows than without. Birds actively pursuing prey in study plots consumed economically important pest species and did not damage crops during the study. The addition of sunflower intercrops proved to be an effective habitat modification for augmenting avian insectivore numbers and insect-foraging time in organic vegetables.
Keywords: Predator augmentation; Avian insectivory; Farmland birds; Helianthus annuus; Intercrops

Sevim Z. Erhan, Brajendra K. Sharma, Joseph M. Perez, Oxidation and low temperature stability of vegetable oil-based lubricants, Industrial Crops and Products, Volume 24, Issue 3, 2005 Annual Meeting of the Association for the Advancement of Industrial Crops: The International Conference on Industrial Crops and Rural Development, November 2006, Pages 292-299, ISSN 0926-6690, DOI: 10.1016/j.indcrop.2006.06.008.
(http://www.sciencedirect.com/science/article/B6T77-4KTVNYK-1/2/557432c7f2a84fc5fc5061016ef70876)
Abstract:
Vegetable oils are promising candidates as base fluid for eco-friendly lubricants because of their excellent lubricity, biodegradability, viscosity-temperature characteristics and low volatility. Their use, however, is restricted due to low thermo-oxidative stability and poor cold flow behavior. This paper presents a systematic approach to improve the oxidation behavior and low temperature fluidity of vegetable oil derivatives. Among the various possible avenues available, the combination of chemical additives, diluent (polyalphaolefin), and high-oleic vegetable oils offer the best option for achieving the ultimate goal. Vegetable oil-based lubricants formulated using the above approach exhibit superior oxidative stability, and improved low temperature properties such as pour points compared to commercially available industrial oils such as bio-based hydraulic fluids. The above vegetable oil-based formulations compare at par with petroleum-based lubricants for use in high-temperature applications and often outperform the competition in some of its properties.
Keywords: Vegetable oils; Oxidative stability; Low temperature stability; Bio-based lubricants; Pressurized differential scanning calorimetry; Rotary bomb oxidation test

Maria Pfeuffer, Jurgen Schrezenmeir, Impact of trans fatty acids of ruminant origin compared with those from partially hydrogenated vegetable oils on CHD risk, International Dairy Journal, Volume 16, Issue 11, Technological and Health Aspects of Bioactive Components of Milk, Technological and Health Aspects of Bioactive Components of Milk, November 2006, Pages 1383-1388, ISSN 0958-6946, DOI: 10.1016/j.idairyj.2006.06.016.
(http://www.sciencedirect.com/science/article/B6T7C-4KPNKH8-2/2/adcf113eb00a5aae13e514bae417ff82)
Abstract:
There is a considerable overlap of trans fatty acid (TFA) isomers in fats of ruminant origin and partially hydrogenated vegetable oils (PHVOs), with many isomers in common. However, there is a considerable difference in the amount of individual TFAs in both sources. At present it is uncertain as to which component(s) of TFAs created by chemical hydrogenation are responsible

for their negative metabolic effects. There is evidence of unfavourable effects of TFAs from hydrogenated vegetable oils on LDL and other risk factors of atherosclerosis. There is no evidence that the predominant TFA in milk, vaccenic acid, exerts these unfavourable effects. Prospective studies addressing the effect of TFA intake on coronary heart disease risk, whose estimate of TFA intake was based on dietary protocols, were mostly carried out in populations with a relatively low intake of dairy or ruminant TFAs. Nevertheless, several of them showed a significantly or non-significantly decreased risk with increasing intake of animal TFAs, or at least no increased risk. Up to now there is no human study available that investigates the effect of different TFAs under 'Ceteris paribus' conditions (isoenergetic diets with otherwise identical fatty acid profile). By now the production of milk fat samples differing mainly in TFA content is feasible and would allow such controlled intervention studies.

D.C. Voit, M.R. Santos, R. Paul Singh, Development of a multipurpose fruit and vegetable processor for a manned mission to Mars, Journal of Food Engineering, Volume 77, Issue 2, Progress on Bioproducts Processing and Food Safety - Selected Papers from the 1st International Conference of CIGR Section VI on Bioproducts Processing and Food Safety, November 2006, Pages 230-238, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.06.035.
(http://www.sciencedirect.com/science/article/B6T8J-4GVGT81-5/2/995e0e6046a7e6637d81d75a87900617)
Abstract:
Current plans for long duration space missions anticipate the need for self-sustaining habitats, which would include plants for food and atmospheric reprocessing. Growth of food, in turn, necessitates a food processing element. A multipurpose fruit and vegetable processor (MFVP) was designed and built for this purpose by comparing potential technologies using equivalent system mass (ESM) impact, a NASA metric. As an example of selection and evaluation, the concentration sub-unit to produce tomato concentrate is reviewed. Evaporation, and integrated membrane approaches--microfiltration (MF), ultrafiltration (UF) and reverse osmosis (RO)--were compared for applicability. Direct RO was selected and tests evaluated operating conditions, maximum concentration and flux decline. Filtration performance parameters were obtained: permeate flux, volume concentration factor (VCF) and power usage. Pressure and temperature were the determining factors in performance and a maximum concentrate of 22.7 [degree sign]Brix was projected. Increases in cross-flow velocity (CFV) added power demand and therefore was found to raise ESM. Added transmembrane pressure (TMP), on the other hand was found to offset power increases by reducing processing time. The study validated the use of ESM as a tool for selecting technologies and proved the usability of RO for the MFVP process.
Keywords: Tomato; Membrane; Reverse osmosis; Equivalent system mass; NASA

Simone Bernhardt, Elmar Schlich, Impact of different cooking methods on food quality: Retention of lipophilic vitamins in fresh and frozen vegetables, Journal of Food Engineering, Volume 77, Issue 2, Progress on Bioproducts Processing and Food Safety - Selected Papers from the 1st International Conference of CIGR Section VI on Bioproducts Processing and Food Safety, November 2006, Pages 327-333, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.06.040.
(http://www.sciencedirect.com/science/article/B6T8J-4GTVYBH-8/2/c5507fbe16bad68d72dbcb715d692858)
Abstract:
The bioavailability of all-trans-[beta]-carotene from vegetables depends among other things on the molecular linkage and the food matrix in which it is incorporated. It is assumed that cooking can increase the bioavailability by disruption of the plant cell wall and releasing from protein complexes. But it can also lead to isomerization and degradation of all-trans-[beta]-carotene. In this investigation the influence of different domestic cooking methods on the all-trans- and cis-[beta]-carotene as well as the [alpha]-tocopherol content in fresh and frozen broccoli and red

sweet pepper is examined. While in fresh broccoli all cooking methods lead to a significant release of all-trans-[beta]-carotene and [alpha]-tocopherol in the frozen broccoli no change or a decrement occurs. In the fresh and frozen peppers no change or a significant loss of [alpha]-tocopherol and all-trans-[beta]-carotene is observed. A slight increase in the cis-isomers of [beta]-carotene can only be found by cooking fresh broccoli.
Keywords: Cooking; Vitamins; [beta]-carotene; [alpha]-tocopherol

M.V. Flyman, A.J. Afolayan, The suitability of wild vegetables for alleviating human dietary deficiencies, South African Journal of Botany, Volume 72, Issue 4, November 2006, Pages 492-497, ISSN 0254-6299, DOI: 10.1016/j.sajb.2006.02.003.
(http://www.sciencedirect.com/science/article/B7XN9-4KGG4GP-2/2/645e6307c9c7413072a1bfbbfd0cc889)
Abstract:
Micronutrient deficiency is a universal problem, which presently affects over two billion people worldwide, resulting in poor health, low worker productivity, high rates of mortality and morbidity. Deficiency in micronutrients has led to increased rates of chronic diseases and permanent impairment of cognitive abilities in infants born to micronutrient deficient mothers. Wild vegetables have been the mainstay of human diets for centuries, providing millions of consumers with important micronutrients, such as vitamins and minerals needed to maintain health and promote immunity against infections. Compared to conventional cultivated species, wild vegetables are hardy, require less care, and are a rich source of micronutrients. Hence, they could make an important contribution to combating micronutrient malnutrition as well as providing food security. Unfortunately, wild vegetables are currently underutilized, and have been neglected by researchers and policy makers. Their promotion and integration into human diets could assist in their protracted use and consequent conservation. However, the chemical, nutritional and toxicological properties of especially local wild vegetables, the bioavailability of micronutrients present in these, and their modification by various processing techniques still need to be properly established and documented before their use as an alternative dietary source can be advocated. Such information would be of fundamental importance in addressing dietary deficiencies in impoverished African rural communities.
Keywords: Wild vegetables; Micronutrients; Bioavailability; Food processing

M. Kostrzynska, Wim Jongen, Editor, Improving the Safety of Fresh Fruit and Vegetables, Woodhead Publishing Limited and CRC Press LLC (2005) ISBN 0849334381 price $279.95., Trends in Food Science & Technology, Volume 17, Issue 11, November 2006, Pages 627-628, ISSN 0924-2244, DOI: 10.1016/j.tifs.2006.07.002.
(http://www.sciencedirect.com/science/article/B6VHY-4KJ0SMF-2/2/3dacb3604c4403171880f34e58e703d8)

Na Young Lee, Cheorun Jo, Dong Hwa Shin, Wang Geun Kim, Myung Woo Byun, Effect of [gamma]-irradiation on pathogens inoculated into ready-to-use vegetables, Food Microbiology, Volume 23, Issue 7, October 2006, Pages 649-656, ISSN 0740-0020, DOI: 10.1016/j.fm.2005.12.001.
(http://www.sciencedirect.com/science/article/B6WFP-4J624C8-1/2/4089fa17055016a0bebcb8bbe171d28a)
Abstract:
Three ready-to-use vegetables, cucumber, blanched and seasoned spinach, and seasoned burdock were selected and the effects of an irradiation treatment for eliminating pathogens were investigated. The pathogens tested were Salmonella Typhimurium, Escherichia coli, Staphylococcus aureus, and Listeria ivanovii. Inoculated viable cells of S. Typhimurium and L. ivanovii into cucumber and blanched and seasoned spinach were reduced about 4 decimal points

by 2 kGy of irradiation and that of S. aureus inoculated into burdock showed about 4-decimal point reduction by 1 kGy. E. coli inoculated into burdock was not detected by 1 kGy. All the bacterial contents of test pathogens into the samples were reduced to below the limit of detection by 3 kGy irradiation. The range of the D10 value was 0.28-0.42 among the four pathogens. A Salmonella mutagenicity assay (Ames test) indicated that the 10 kGy-irradiated ready-to-use vegetables did not cause any increase. The studies indicated that a low-dose irradiation (3 kGy or less) can improve the microbial safety of ready-to-use vegetables.
Keywords: Vegetables; Pathogen; Irradiation; Ready-to-use; Mutagenicity

R. Lucas, M J. Grande, H. Abriouel, M. Maqueda, N. Ben Omar, E. Valdivia, M. Martinez-Canamero, A. Galvez, Application of the broad-spectrum bacteriocin enterocin AS-48 to inhibit Bacillus coagulans in canned fruit and vegetable foods, Food and Chemical Toxicology, Volume 44, Issue 10, October 2006, Pages 1774-1781, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.05.019.
(http://www.sciencedirect.com/science/article/B6T6P-4K4DH6C-4/2/dc8e450c26109b3ea2b398024521a1f9)
Abstract:
The enterococcal bacteriocin (enterocin) AS-48 is a broad-spectrum cyclic peptide. Enterocin AS-48 was tested against Bacillus coagulans in three vegetable canned foods: tomato paste (pH 4.64), syrup from canned peaches (pH 3.97), and juice from canned pineapple (pH 3.65). When vegetative cells of B. coagulans CECT (Spanish Type Culture Collection) 12 were inoculated in tomato paste supplemented with 6 [mu]g/ml AS-48 and stored at different temperatures, viable cell counts were reduced by approximately 2.37 (4 [degree sign]C), 4.3 (22 [degree sign]C) and 3.0 (37 [degree sign]C) log units within 24 h storage. After 15-days storage, no viable cells were detected in any sample. Strain B. coagulans CECT 561 showed a poor survival in tomato paste, but surviving cells were also killed by AS-48. The bacteriocin was also very active against B. coagulans CECT 12 vegetative cells in juice from canned pineapple stored at 22 [degree sign]C, and slightly less active in syrup from canned peaches. In food samples supplemented with 1.5% lactic acid, enterocin AS-48 (6 [mu]g/ml) rapidly reduced viable counts of vegetative cells below detection limits within 24 h storage. Addition of glucose and sucrose (10% and 20%) significantly increased bacteriocin activity against vegetative cells of B. coagulans CECT 12. Enterocin AS-48 had no significant effect on B. coagulans CECT 12 spores. However, the combined application of AS-48 and heat (80-95 [degree sign]C for 5 min) significantly increased the effect of thermal treatments on spores.
Keywords: Bacillus coagulans; Canned vegetables; Flat sour; Biopreservation; Enterocin AS-48

Xue-Jian YE, Zheng-Yin Wang, Shi-Hua Tu, G. SULEWSKI, Nutrient Limiting Factors in Acidic Vegetable Soils, Pedosphere, Volume 16, Issue 5, October 2006, Pages 624-633, ISSN 1002-0160, DOI: 10.1016/S1002-0160(06)60096-9.
(http://www.sciencedirect.com/science/article/B82XV-4KYR9DF-B/2/7a4a4a0f95400278057c10d0845e3914)
Abstract: ABSTRACT
Nutrient limiting factors in acidic soils from vegetable fields of the Chongqing suburbs of China were assessed by employing the systematic approach developed by Agro Services International (ASI) including soil testing, nutrient adsorption study, and pot and field experiments to verify the results of soil testing, with a conventional soil test (CST) used for comparison. The ASI method found the moderately acidic soil (W01) to be N and P deficient; the strongly acidic soil (W04) to be N, K and S deficient; and the slightly acidic soil (W09) to be N, K, S, Cu, Mn, and Zn deficient. The CST method showed that W01 had P, B and Cu deficiencies; W04 had N, P and S deficiencies; and W09 had N, P, S, B, Cu, and Zn deficiencies. There were differences between the two methods. Among the two indicator plants selected, the response of sorghum on the three representative acidic soils was more closely related to the ASI results than that of sweet pepper.

Keywords: acidic vegetable soil; nutrient limiting factor; sorghum; sweet pepper; systematic approach

M. Zhang, J. Tang, A.S. Mujumdar, S. Wang, Trends in microwave-related drying of fruits and vegetables, Trends in Food Science & Technology, Volume 17, Issue 10, October 2006, Pages 524-534, ISSN 0924-2244, DOI: 10.1016/j.tifs.2006.04.011.
(http://www.sciencedirect.com/science/article/B6VHY-4K0C9HW-2/2/a99df348cc7632608df39c676d1c15de)
Abstract:
Microwave (MW)-related (MW-assisted or MW-enhanced) combination drying is a rapid dehydration technique that can be applied to specific foods, particularly to fruits and vegetables. Increasing concerns over product quality and production costs have motivated the researchers to investigate and the industry to adopt combination drying technologies. The advantages of MW-related combination drying include the following: shorter drying time, improved product quality, and flexibility in producing a wide variety of dried products. But current applications are limited to small categories of fruits and vegetables due to high start-up costs and relatively complicated technology as compared to conventional convection drying. MW-related combination drying takes advantages of conventional drying methods and microwave heating, leading to better processes than MW drying alone. This paper presents a comprehensive review of recent progresses in MW-related combined drying research and recommendations for future research to bridge the gap between laboratory research and industrial applications.

Dean A. Kopsell, David E. Kopsell, Accumulation and bioavailability of dietary carotenoids in vegetable crops, Trends in Plant Science, Volume 11, Issue 10, October 2006, Pages 499-507, ISSN 1360-1385, DOI: 10.1016/j.tplants.2006.08.006.
(http://www.sciencedirect.com/science/article/B6TD1-4KSVGCD-1/2/ec545a3421f6202a889c025d3d18bd42)
Abstract:
Carotenoids are lipid-soluble pigments found in many vegetable crops that are reported to have the health benefits of cancer and eye disease reduction when consumed in the diet. Research shows that environmental and genetic factors can significantly influence carotenoid concentrations in vegetable crops, and that changing cultural management strategies could be advantageous, resulting in increased vegetable carotenoid concentrations. Improvements in vegetable carotenoid levels have been achieved using traditional breeding methods and molecular transformations to stimulate biosynthetic pathways. Postharvest and processing activities can alter carotenoid chemistry, and ultimately affect bioavailability. Bioavailability data emphasize the importance of carotenoid enhancement in vegetable crops and the need to characterize potential changes in carotenoid composition during cultivation, storage and processing before consumer purchase.

Luis Jimenez-Yan, Abelardo Brito, Gerard Cuzon, Gabriela Gaxiola, Tomas Garcia, Gabriel Taboada, Luis A. Soto, Roberto Brito, Energy balance of Litopenaeus vannamei postlarvae fed on animal or vegetable protein based compounded feeds, Aquaculture, Volume 260, Issues 1-4, 29 September 2006, Pages 337-345, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2006.06.005.
(http://www.sciencedirect.com/science/article/B6T4D-4KCPV26-2/2/d400dd3cef9c7c1fa0bb1f76a40c7abf)
Abstract:
L. vannamei postlarvae are normally raised with a protein dense diet (50% protein) rich in fishmeal. Part of the protein is utilized for energy purpose instead of protein synthesis. Based on a previous energy partitioning study, the effects of two isoenergetic compounded feed treatments - animal protein (AP) and vegetable protein and carbohydrates (VPC) - upon growth efficiency and energy budget of shrimp postlarvae and early juveniles were determined. Recovered energy (RE)

or production (P) after 50 days trial was similar (2 J day- 1) in both treatments, from PL14 to PL19. However, early juveniles discriminated between animal protein (116 J day- 1) and vegetable protein and carbohydrates (88 J day- 1). The difference in respiration indicated a higher heat increment with AP compared to VPC. At maintenance level, energy used was lower with AP than VPC treatment. Postlarvae and early juveniles employed protein as a main energy substrate (O:N < 20). Differences in the efficiencies observed in the calculated energy budget were attributed to the presence of carbohydrates in diet and not to the protein source. The advantage of incorporating vegetable protein source in the diet of harvesting shrimp may eventually contribute towards a reduction of fishmeal costs and waste products as well as to achieve sustainable shrimp farming.
Keywords: Postlarvae; Juvenile; Energy; Animal protein; Vegetable protein; Physiology; Shrimp

Jascha de Nooijer, Evelien Reinaerts, Nanne de Vries, Mixed results in changing children's determinants of fruit and vegetable consumption by two school-based programmes, Appetite, Volume 47, Issue 2, September 2006, Page 262, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.07.020.
(http://www.sciencedirect.com/science/article/B6WB2-4KPX8F2-12/2/487876748fee93f2af0bca18089b4cb7)

T.M. Dovey, M. Shuttleworth, Food neophobia and willingness to eat vegetables in British rural and urban children, Appetite, Volume 47, Issue 2, September 2006, Page 263, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.07.021.
(http://www.sciencedirect.com/science/article/B6WB2-4KPX8F2-13/2/eed080fc44e130f90b810c074f5ebec3)

Remco Havermans, Anita Jansen, Using flavour-flavour learning to increase children's liking of vegetables, Appetite, Volume 47, Issue 2, September 2006, Page 265, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.07.029.
(http://www.sciencedirect.com/science/article/B6WB2-4KPX8F2-1C/2/e11c51821949d15c7d5ae7f9d49e2988)

Evelien Reinaerts, Jascha de Nooijer, Nanne de Vries, Increasing children's fruit & vegetable consumption: distribution or stimulation?, Appetite, Volume 47, Issue 2, September 2006, Page 274, ISSN 0195-6663, DOI: 10.1016/j.appet.2006.07.055.
(http://www.sciencedirect.com/science/article/B6WB2-4KPX8F2-29/2/bfbbb530624059d9a01a2077ae3cafe7)

C.J. Schaschke, S. Allio, E. Holmberg, Viscosity Measurement of Vegetable Oil at High Pressure, Food and Bioproducts Processing, Volume 84, Issue 3, September 2006, Pages 173-178, ISSN 0960-3085, DOI: 10.1205/fpb.05122.
(http://www.sciencedirect.com/science/article/B8JGD-4RTVVNB-1/2/959ab144bc779e42124b9c8771707981)
Abstract:
In this work we report the measurement of the viscosity of olive oil at high pressure using a falling sinker type viscometer. The design of the viscometer relies on a close-fitting self-centring sinker enclosed within a vertical tube maintained at a controlled temperature. Based on the accurate fall times of the sinker measured electronically, the performance of the viscometer was studied to provide the relationship of viscosity with pressure for olive oil up to 150 MPa. The viscometer used in this work was shown to provide easily obtained reliable experimental data for correlation with existing relationships of viscosity and pressure.

Keywords: falling sinker viscometer; high-pressure; viscosity; olive oil; Peng-Robinson Equation of State

Sabrina Peterson, Johanna W. Lampe, Theo K. Bammler, Kerstin Gross-Steinmeyer, David L. Eaton, Apiaceous vegetable constituents inhibit human cytochrome P-450 1A2 (hCYP1A2) activity and hCYP1A2-mediated mutagenicity of aflatoxin B1, Food and Chemical Toxicology, Volume 44, Issue 9, September 2006, Pages 1474-1484, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.04.010.
(http://www.sciencedirect.com/science/article/B6T6P-4JTPM8P-1/2/4ccca6513a1f4ee180288a9bf731831f)
Abstract:
In humans, apiaceous vegetables (carrots, parsnips, celery, parsley, etc.) inhibit cytochrome P-450 1A2, a biotransformation enzyme known to activate several procarcinogens, including aflatoxin B1 (AFB). We evaluated eight phytochemicals from apiaceous vegetables for effects on human cytochrome P-450 1A2 (hCYP1A2) activity using a methoxyresorufin O-demethylase (MROD) assay and a trp-recombination assay. Saccharomyces cerevisiae was used for heterologous CYP1A2 expression and this yeast strain is also diploid and auxotrophic for tryptophan due to mutations in the trp5 alleles. When these two alleles undergo AFB-induced mitotic recombination, gene conversion occurs, allowing yeast to grow in the absence of tryptophan. The apiaceous constituents psoralen, 5-methoxypsoralen (5-MOP), 8-methoxypsoralen (8-MOP), and apigenin were potent inhibitors of hCYP1A2-mediated MROD activity in yeast microsomes, whereas quercetin was a modest hCYP1A2 inhibitor. Naringenin, caffeic acid, and chlorogenic acid did not inhibit hCYP1A2-mediated MROD activity. The 2-h pretreatment of intact yeast cells with psoralen, 5-MOP, and 8-MOP significantly improved cell survival after subsequent 4-h AFB treatment and reduced hCYP1A2-mediated mutagenicity of AFB. Apigenin also significantly decreased mutagenicity. These results suggest that in vivo CYP1A2 inhibition by apiaceous vegetables may be due to the phytochemicals present and imply that apiaceous vegetable intake may be chemopreventive by inhibiting CYP1A2-mediated carcinogen activation.
Keywords: Aflatoxin; Apiaceae; Carrot; CYP1A2; Flavonoid; Furanocoumarin

R.A. Matulka, O. Noguchi, N. Nosaka, Safety evaluation of a medium- and long-chain triacylglycerol oil produced from medium-chain triacylglycerols and edible vegetable oil, Food and Chemical Toxicology, Volume 44, Issue 9, September 2006, Pages 1530-1538, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.04.004.
(http://www.sciencedirect.com/science/article/B6T6P-4JT8DM5-3/2/e83942086bccf354d7db7cad3ae94b71)
Abstract:
To reduce the incorporation of dietary lipids into adipose tissue, modified fats and oils have been developed, such as medium-chain triacylglycerols (MCT). Typical dietary lipids from vegetable oils, termed long-chain triacylglycerols (LCT), are degraded by salivary, intestinal and pancreatic lipases into two fatty acids and a monoacyl glycerol; whereas, MCT are degraded by the same enzymes into three fatty acids and the simple glycerol backbone. Medium-chain fatty acids (MCFA) are readily absorbed from the small intestine directly into the bloodstream and transported to the liver for hepatic metabolism, while long-chain fatty acids (LCFA) are incorporated into chylomicrons and enter the lymphatic system. MCFA are readily broken down to carbon dioxide and two-carbon fragments, while LCFA are re-esterified to triacylglycerols and either metabolized for energy or stored in adipose tissue. Therefore, consumption of MCT decreases the incorporation of fatty acids into adipose tissue. However, MCT have technological disadvantages precluding their use in many food applications. A possible resolution is the manufacture and use of a triacylglycerol containing both LCT and MCT, termed medium- and long-chain triacylglycerol (MLCT).

This manuscript describes studies performed for the safety evaluation of a MLCT oil enzymatically produced from MCT and edible vegetable oil (containing LCT), by a transesterification process. The approximate fatty acid composition of this MLCT consists of caprylic acid (9.7%), capric acid (3.3%), palmitic acid (3.8%), stearic acid (1.7%), oleic acid (51.2%), linoleic acid (18.4%), linolenic acid (9.0%), and other fatty acids (2.9%). The approximate percentages of long (L) and medium (M) fatty acids in the triacylglyerols are as follows: L, L, L (55.1%), L, L, M (35.2%), L, M, M (9.1%), and M, M, M (0.6%). The studies included: (1) acute study in rats (LD50 > 5000 mg/kg); (2) 6 week repeat-dose safety study via dietary administration to rats (NOAEL of 3500 mg/kg/day), (3) in vitro genotoxicity studies using Salmonella typhimurium and Escherichia coli (negative at 5000 mg/plate), and (4) a four-week, placebo-controlled, double blind, human clinical trial utilizing 20 test subjects (no effects at 42 g MLCT/day). These data are corroborated by other studies published in the peer-reviewed literature on analogous MLCTs.
Keywords: Lipase; LD50; Oral; Subchronic; Toxicity; Mutagenicity; Rat; Triacylglycerol; Clinical trial

U. Kidmose, R.-Y. Yang, S.H. Thilsted, L.P. Christensen, K. Brandt, Content of carotenoids in commonly consumed Asian vegetables and stability and extractability during frying, Journal of Food Composition and Analysis, Volume 19, Issues 6-7, Biodiversity and nutrition: a common path, September-November 2006, Pages 562-571, ISSN 0889-1575, DOI: 10.1016/j.jfca.2006.01.011.
(http://www.sciencedirect.com/science/article/B6WJH-4JMV289-1/2/870a831c3e167b2b6f8f14e32e462b2c)
Abstract:
In order to investigate the variation in [beta]-carotene and vitamin A in commonly consumed vegetables in Asia, different leafy vegetables were analyzed. The mean [beta]-carotene content varied between 16 and 6630 [mu]g/100 g fresh weight (FW) with the highest content in drumstick leaves and the lowest content in common cabbage and Garland chrysanthemum leaves. In six tuber and fruit vegetables, the mean [beta]-carotene content varied between 311 and 15,400 [mu]g/100 g FW with the highest content in a chili pepper variety. Vitamin A activity varied significantly between the investigated vegetables (1-1280 [mu]g retinol activity equivalents (RAE)/100 g FW). The retention of [beta]-carotene and formation of cis-isomers were investigated in selected vegetables during stir-frying. Retentions of all-trans-[beta]-carotene varied between 73% and 98% in sweet bell pepper, sweet potato and tomato that were fried for . In sweet potato, 13-cis-[beta]-carotene was the major cis-isomer of [beta]-carotene, while only minor amounts of 15-cis- and 9-cis-[beta]-carotene were formed. The total amount of cis-isomers of [beta]-carotene formed during frying depended on the frying time and the size with the highest amount in cubes, that were fried for 3 min (1070 [mu]g 13-cis-[beta]-carotene/100 g FW). In leafy vegetables, only 13-cis-[beta]-carotene was detected during frying. Extraction of [beta]-carotene into the frying oil was only observed in low amounts after 3 min frying of sweet potato shreds.
Keywords: [beta]-Carotene; Vitamin A activity; Frying; Retention; Vegetables

Lydia A. Bazzano, The High Cost of Not Consuming Fruits and Vegetables, Journal of the American Dietetic Association, Volume 106, Issue 9, September 2006, Pages 1364-1368, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.06.021.
(http://www.sciencedirect.com/science/article/B758G-4KV82NX-G/2/e615b4406acb44b4e14d466447e8b87b)

Patricia M. Guenther, Kevin W. Dodd, Jill Reedy, Susan M. Krebs-Smith, Most Americans Eat Much Less than Recommended Amounts of Fruits and Vegetables, Journal of the American Dietetic Association, Volume 106, Issue 9, September 2006, Pages 1371-1379, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.06.002.

(http://www.sciencedirect.com/science/article/B758G-4KV82NX-J/2/8513436f5834e4bce38757b9a51fab7f)
Abstract: Objective
To estimate the proportions of the population meeting recommendations for fruit and vegetable intake, we first estimated the usual intake distributions of total fruits and vegetables and then compared the results to the 5 A Day recommendation and to the recommendations for fruits and vegetables combined, found in the new US Department of Agriculture food guide, MyPyramid.Design/subjects
The primary dataset was created from one 24-hour recall from each of 8,070 respondents in the 1999-2000 National Health and Nutrition Examination Survey. Variances were estimated using one or two 24-hour recalls from 14,963 respondents in the 1994-1996 Continuing Survey of Food Intakes by Individuals.Statistical Analysis
The statistical method developed at Iowa State University was used for estimating distributions of usual intake of dietary components that are consumed daily. It was modified to allow the adjustment of heterogeneous within-person variances using an external estimate of heterogeneity.Results
In 1999-2000, only 40% of Americans ate an average of five or more 1/2-cup servings of fruits and vegetables per day. The proportions of sex-age groups meeting the new US Department of Agriculture recommendations ranged from 0.7% of boys aged 14 to 18 years, whose combined recommendation is 5 cups, to 48% of children aged 2 to 3 years, whose combined recommendation is 2 cups.Conclusions
Americans need to consume more fruits and vegetables, especially dark green and orange vegetables and legumes. Nutritionists must help consumers realize that, for everyone older than age 3 years, the new recommendations for fruit and vegetable intakes are greater than the familiar five servings a day.

L. Joseph Su, Lenore Arab, Salad and Raw Vegetable Consumption and Nutritional Status in the Adult US Population: Results from the Third National Health and Nutrition Examination Survey, Journal of the American Dietetic Association, Volume 106, Issue 9, September 2006, Pages 1394-1404, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.06.004.
(http://www.sciencedirect.com/science/article/B758G-4KV82NX-N/2/8d65386b4e0a071359ac05bc78cd2677)
Abstract: Objective
To examine the relationship between reported salad consumption and serum nutrient levels as well as dietary adequacy, as defined by nutrient intakes, in relation to the National Academy of Science Food and Nutrition Board Guidelines, in pre- and postmenopausal women and in men of comparable ages.Design
Analyses of 24-hour recalls were conducted to determine dietary intake using the Third National Health and Nutrition Examination Survey data. Salad consumption was assessed based on intakes of salad, raw vegetables, and salad dressing.Subjects
Nine thousand four hundred-six women and 8,282 men aged 18 to 45 years and older than 55 years were examined between 1988 and 1994.Statistical Analyses
Regressions were used to model associations between salad and raw vegetable consumption and selected serum nutrient outcomes. Usual nutrient intake distributions were estimated using the Iowa State University method for adjustment of the distribution. The Estimated Average Requirement method was used to determine the proportion of subjects with inadequate intake for each nutrient.Results
The consumption of salads, raw vegetables, and salad dressing was positively associated with above-median serum micronutrient levels of folic acid, vitamins C and E, lycopene, and [alpha]- and [beta]-carotene. Each serving of salad consumed was associated with a 165% higher

likelihood to meet the recommended Dietary Allowance for vitamin C in women and 119% greater likelihood in men.Conclusions
Salad consumers tended to have more favorable intakes of vitamins C and E, folic acid, and carotenoids, after adjustment for other differences. The significant and consistently higher serum values of these vitamins among salad consumers suggest that they are being well absorbed from salad. Salad, salad dressing, and raw vegetable consumption can be an effective strategy for enhancing nutritional adequacy and increasing vegetable consumption in the population at large.

Amy Richards, Kendra K. Kattelmann, Cuirong Ren, Motivating 18- to 24-Year-Olds to Increase Their Fruit and Vegetable Consumption, Journal of the American Dietetic Association, Volume 106, Issue 9, September 2006, Pages 1405-1411, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.06.005.
(http://www.sciencedirect.com/science/article/B758G-4KV82NX-P/2/8a4986b914aead33001e590c8d94727d)
Abstract: Objective
This study assessed the effectiveness of a 4-month intervention using stage-based newsletters, computer-based communication, and motivational interviewing to increase fruit and vegetable consumption by college students aged 18 to 24 years.Design
Participants were stratified by stage of change for fruit and vegetable consumption and randomized to an intervention or control group. Participants completed the staging algorithm for fruit and vegetable intake, which included a one-item food frequency question, a 26-item food frequency questionnaire (FFQ), an 18-item decisional balance questionnaire, and a five-item self-efficacy questionnaire at baseline and completion of study.Subjects
A convenience sample of 437 college students enrolled in a rural, land grant university was enrolled in the study. Only nondietetics majors between ages 18 to 24 years were included in the study. A total of 314 students finished the study for a completion rate of 72%.Intervention
After baseline staging and randomization, the intervention group participants received four stage-based newsletters, one motivational interview, and an individually tailored e-mail follow-up over a 4-month period. Control group participants only received assessment at baseline and at completion.Main Outcome Measures
Two fruit and vegetable instruments, a one-item food frequency question, and a 26-item FFQ measured daily consumption of fruits and vegetables at baseline and postintervention.Statistical Analyses Performed
The SAS system for Windows, version 8 (1999, SAS Institute, Inc, Cary, NC), was used for analysis, including the following tests: PROC GLM, PROC FREQ, and PROC NPAR1WAY, Kruskal-Wallis, Fisher, Wilcoxon rank sum, and [chi]2.Results
Fruit and vegetable consumption increased significantly more for the intervention group than the control group. Consumption increased in the intervention group by one serving a day for both instruments compared with 0.4 servings a day in the control group for a one-item instrument and no change in the control group for a 26-item FFQ.Conclusions
This intervention is an effective way to increase fruit and vegetable consumption by young adults.

Jeffrey J. VanWormer, Jackie L. Boucher, Nicolaas P. Pronk, Telephone-Based Counseling Improves Dietary Fat, Fruit, and Vegetable Consumption: A Best-Evidence Synthesis, Journal of the American Dietetic Association, Volume 106, Issue 9, September 2006, Pages 1434-1444, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.06.008.
(http://www.sciencedirect.com/science/article/B758G-4KV82NX-V/2/2268f75c0c7a9991661b9c281101ee7a)
Abstract:
Eating more fruits/vegetables and less dietary fat rank among the most important nutrition recommendations for health improvement. Telephone counseling is an increasingly popular means

of delivering support for diet modification. Using a best-evidence synthesis, the purpose of this review was to assess the effectiveness of telephone-based counseling on improving dietary fat, fruit, and vegetable consumption for adults. Online databases and article bibliographies were searched to produce relevant randomized-controlled trials published during the past 5 years. Nine studies were ultimately included and the weight of the evidence indicated that telephone-based counseling promotes significantly greater improvements in fruit/vegetable consumption (median effect size=0.41) and dietary fat intake (median effect size=0.22) relative to usual care. Improvements were especially pronounced among women with (or at high risk for developing) cancer. In some studies, telephone-based counseling was also associated with greater improvement in blood lipid levels and weight. Based on these findings, several design considerations (eg, population focus, counseling intensity) for program managers are proposed. Telephone-based counseling was found to be a moderately effective intervention, but there are not enough studies yet to draw conclusions on other research questions, such as how advantageous telephone-based counseling is over traditional forms of dietary counseling. At present, telephone-based counseling may best be used as a complement to clinical care and a means to broaden the outreach of nutrition services.

Mohamed A. Radwan, Ahmed K. Salama, Market basket survey for some heavy metals in Egyptian fruits and vegetables, Food and Chemical Toxicology, Volume 44, Issue 8, August 2006, Pages 1273-1278, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.02.004.
(http://www.sciencedirect.com/science/article/B6T6P-4JDN6HW-1/2/4f06c9e1fff40f86c5d0186e635921f1)
Abstract:
A market basket survey was carried out with the aim to assess the levels of lead (Pb), cadmium (Cd), copper (Cu) and zinc (Zn) in various fruits and vegetables sold in Egyptian markets. Atomic absorption spectrometry was used to estimate and evaluate the levels of these metals. The results of this survey showed that the average concentrations detected were ranged from 0.01 to 0.87, 0.01 to 0.15, 0.83 to 18.3 and 1.36 to 20.9 mg/kg for Pb, Cd, Cu and Zn, respectively. The highest mean levels of Pb, Cd, Cu and Zn were detected in strawberries, cucumber, date and spinach, respectively. The levels of the metals compare with those reported for similar fruits and vegetables from some other parts of the world. The daily intakes of Pb, Cd, Cu and Zn through fruits and vegetables have also been estimated. They are found to be below the recommended tolerable levels proposed by [Joint FAO/WHO Expert Committee on Food Additives 1999. Summary and conclusions. In: 53rd Meeting, Rome, June 1-10, 1999] and may not constitute a health hazards for consumers.
Keywords: Heavy metals; Food; Contaminants; Fruits; Vegetables; Daily intake

B.M. Smith, C.Z. Malpede, C.B. Worley, Q.P. Mitchell, M.L. Baskin, Fruit, Vegetable and Fat Consumption in African-American Urban Middle School Students, Journal of the American Dietetic Association, Volume 106, Issue 8, Supplement 1, ADA FNCE Food & Nutrition Conference & Expo 2006, August 2006, Page A40, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.05.268.
(http://www.sciencedirect.com/science/article/B758G-4KG2GYR-3S/2/7482d4a5d86e1690d80b2100a2445d41)

J.A. Driskell, M.N. Nunn, D.W. Giraud, F.L. Hamouz, Effects of Induction, Conventional, and Microwave Cooking on Sensory Qualities and Carotenoid Retention in Selected Vegetables, Journal of the American Dietetic Association, Volume 106, Issue 8, Supplement 1, ADA FNCE Food & Nutrition Conference & Expo 2006, August 2006, Page A42, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.05.274.
(http://www.sciencedirect.com/science/article/B758G-4KG2GYR-3Y/2/bb06b00d4f51d449ad5d2244469ce85c)

E.A. Kalina, C.L.S. Arnold, Impact of Nutrition Education on the Fruit and Vegetable Consumption of Children, Journal of the American Dietetic Association, Volume 106, Issue 8, Supplement 1, ADA FNCE Food & Nutrition Conference & Expo 2006, August 2006, Page A47, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.05.140.
(http://www.sciencedirect.com/science/article/B758G-4KG2GYR-4N/2/56ee31d636d825480b0e47f37bc6198e)

N.I. Larson, D. Neumark-Sztainer, P.J. Hannan, M. Story, Intakes of Fruits and Vegetables Among Adolescents in Minnesota: Longitudinal and Secular Trends from 1999-2004, Journal of the American Dietetic Association, Volume 106, Issue 8, Supplement 1, ADA FNCE Food & Nutrition Conference & Expo 2006, August 2006, Page A70, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.05.304.
(http://www.sciencedirect.com/science/article/B758G-4KG2GYR-7G/2/7455f25798cc1362afb8033b95828f72)

D.B. Reed, V.L. Huffman, R.J. Lucky, Supermarket Survey Shows Consumers' Preference for Fresh Fruits and Vegetables and Identifies Education and Partnership Opportunities, Journal of the American Dietetic Association, Volume 106, Issue 8, Supplement 1, ADA FNCE Food & Nutrition Conference & Expo 2006, August 2006, Page A71, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.05.305.
(http://www.sciencedirect.com/science/article/B758G-4KG2GYR-7H/2/04b3aa03bfb252b1940e61a690471d21)

J.D. Ard, S. Chaney, R.A. Desmond, T.L. Cox, L.E. Faulk, M.L. Baskin, The Relationship Between Fruit and Vegetable Cost and the Neighborhood Environment, Journal of the American Dietetic Association, Volume 106, Issue 8, Supplement 1, ADA FNCE Food & Nutrition Conference & Expo 2006, August 2006, Page A75, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.05.225.
(http://www.sciencedirect.com/science/article/B758G-4KG2GYR-83/2/4df09c9dbceb8dd302f2cd50376e0a49)

M. Wadhwa, S. Kaushal, M.P.S. Bakshi, Nutritive evaluation of vegetable wastes as complete feed for goat bucks, Small Ruminant Research, Volume 64, Issue 3, August 2006, Pages 279-284, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2005.05.017.
(http://www.sciencedirect.com/science/article/B6TC5-4H3JJFG-1/2/882eb510666776d42507b3c176549cb0)
Abstract:
The nutritional worth of vegetable wastes like cauliflower leaves, cabbage leaves, pea pods and pea vines was assessed in comparison to conventional green oats fodder in bucks. Each of the vegetable waste, supplemented with minerals and common salt, was fed ad lib as complete feed, to 3 bucks (Beetle x Anglo Nubian x French Alpine; 6 years old of 62.6 +/- 1.1 kg BW). The leaves of cauliflower and cabbage had low ($P < 0.05$) concentration of cell wall constituents, but high ($P < 0.05$) concentration of CP, except that CP of pea pods was comparable with cabbage leaves. Cabbage leaves had highest (20.6%) and pea pods had lowest (4.8%) concentration of water soluble sugars. Cauliflower leaves had highest concentration of phenolics (5.9%), comparable with cabbage leaves, but lowest concentration was observed in pea pods (0.3%). The fractionation of proteins indicated that vegetable waste in general had high concentration of water soluble (54-62%) and low concentration of alcohol soluble (8-9%) fractions. Digestibility of nutrients except that of NDF was comparable in cabbage and cauliflower leaves, but higher ($P < 0.05$) than in other vegetable wastes and conventional green oats fodder. The total purine derivatives excreted in urine were high ($P < 0.05$) in cauliflower leaves (1.5 mmol/kg BW0.75/day) followed by those fed

pea pods, and lowest in those fed pea vines (0.29 mmol/kg BW0.75/day). Allantoin constituted the major portion (69-91%) of purine derivatives excreted in urine. Microbial protein synthesis was high ($P < 0.05$) in animals fed cauliflower leaves followed by those fed pea pods and low in bucks fed pea vines. The N-excretion as % of N-intake was lowest ($P < 0.05$) in animals fed pea pods (65.1%) resulting in significantly higher N-retention (24.5 g/day) and apparent biological value (BV), which was comparable to cauliflower leaves and green oats. In spite of maximum CP digestibility, the apparent BV was lowest in cabbage leaves. The ME value of both cabbage and cauliflower leaves was significantly higher than that of pea vines. It was concluded that cabbage leaves, cauliflower leaves and pea pods could serve as excellent source of nutrients for ruminants and can economize the production of animals.
Keywords: Vegetable wastes; Nutritional evaluation; Purine derivatives; Goat bucks

P.S. Minhas, N. Sharma, R.K. Yadav, P.K. Joshi, Prevalence and control of pathogenic contamination in some sewage irrigated vegetable, forage and cereal grain crops, Bioresource Technology, Volume 97, Issue 10, July 2006, Pages 1174-1178, ISSN 0960-8524, DOI: 10.1016/j.biortech.2005.05.006.
(http://www.sciencedirect.com/science/article/B6V24-4GMGW7R-3/2/3b1310e6f10cad40b46d0b9f1c730ef0)
Abstract:
A total of 344 samples comprising of different vegetables, fodder and grain crops were obtained from a long-term experiment under sewage irrigation. The aerobic bacterial plate counts for vegetables, fodder and grain crops ranged between 2 x 106 and 3.5 x 107, 6 x 106 and 3 x 108, 2 x 105 and 3.8 x 1010, respectively, while the corresponding Faecal coliform ranged between <2 and 9 x 105, 9 x 102 and 2 x 105 and <2, indicating that the pathogenic loads got reduced below permissible level in the produce that was harvested after sun drying in the field itself, whereas the parts coming in direct contact were the most severely contaminated. The health hazards could be markedly lowered with adoption of some of the low cost practices such as repeated washings, exposure of the produce to sunlight and raising the crops on beds. The coliform counts in vegetables were within permissible limits by two washings with water, exposing these to sunlight for about 4 h and removing the two outmost leaves of cabbage. Also, cutting above some height from ground level (0.10 m) in sorghum reduced the pollution load in fodder crops.
Keywords: Faecal coliform; Pathogenic contamination; Wastewater; Health hazards; Management practices

Wieland Peschel, Ferran Sanchez-Rabaneda, Wilfried Diekmann, Andreas Plescher, Irene Gartzia, Diego Jimenez, Rosa Lamuela-Raventos, Susana Buxaderas, Carles Codina, An industrial approach in the search of natural antioxidants from vegetable and fruit wastes, Food Chemistry, Volume 97, Issue 1, July 2006, Pages 137-150, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.03.033.
(http://www.sciencedirect.com/science/article/B6T6R-4GD4ST8-2/2/0a5a85acec577fa720e1ec42c5a17ba3)
Abstract:
Eleven fruit and vegetable byproducts and two minor crops were screened for industrial polyphenol exploitation potential by determination of their extraction yield, total phenolic content (TPC, Folin-Ciocalteu), and antioxidant activity (NTZ/hypoxanthine superoxide assay, ferric thiocyanate method). Extracts with the highest activity, economic justification and phenolic content were obtained from apple (TPC maximum 48.6 +/- 0.9 mg Gallic acid equivalents g-1 dry extract), pear (60.7 +/- 0.9 mg GAE g-1), tomato (61.0 +/- 3.0 mg GAE g-1), golden rod (251.4 +/- 7.0 mg GAE g-1) and artichoke (514.2 +/- 14.9 mg GAE g-1). Apple, golden rod and artichoke byproducts were extracted at pilot plant scale and their antioxidant activity was confirmed by determination of their free radical scavenging activity (DPPH) and the inhibition of stimulated linoleic acid

peroxidation (TBA and Rancimat(R) methods). The preservative effect of the three extracts (determination of the peroxide value in test creme formulations with 0.1-1.0% extract concentrations) was similar to the established antioxidants Oxynex(R) 0.1%, Controx(R) KS 0.15%, and butylated hydroxytoluene (BHT) 0.01%. This study demonstrates the possibility of recovering high amounts of phenolics with antioxidant properties from fruit and vegetable residuals not only for food but also cosmetic applications.
Keywords: Plant extracts; Agricultural wastes; Byproducts; Fruits; Vegetables; Antioxidant activity; Radical scavenging activity; Phenolic content

Adele Papetti, Maria Daglia, Pietro Grisoli, Cesare Dacarro, Cesarina Gregotti, Gabriella Gazzani, Anti- and pro-oxidant activity of Cichorium genus vegetables and effect of thermal treatment in biological systems, Food Chemistry, Volume 97, Issue 1, July 2006, Pages 157-165, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.03.036.
(http://www.sciencedirect.com/science/article/B6T6R-4GCWYR7-4/2/6ea7fada6033f2c85f57474c17ec39e9)
Abstract:
The antiradical activity of water soluble components in six vegetables belonging to the Cichorium genus, i.e., three cultivars of red intybus species var. silvestre (Treviso, Chioggia, Verona red chicories), a white intybus species var. foliosum (Belgian chicory), and two vegetables of the endivia species var. latifolium (escarole chicory) and var. crispum ('crispa' chicory), were studied using two biological systems consisting of: (1) microsome membrane rat hepatocyties in which oxidative damage was induced by CCl4; (2) gram-positive bacterium, Staphylococcus aureus cultures, subjected to damage with cumene hydroperoxyde. The obtained results show that in both systems the red vegetables possess the strongest antioxidant properties and contain different antioxidant compounds whether at a low or high molecular weight, but only those of high molecular-weight (MW > 3500 Da) are able to act as antioxidants in all the used systems. The lower MW fraction (MW < 3500 Da) showed itself to be pro-oxidant in the microsome system. The effects of thermal treatments such as boiling, freezing and freeze-drying were also investigated.
Keywords: Cichorium intybus; Cichoriaceae; Vegetables; Biological anti-and pro-oxidants; Thermal treatment

Hartwig Bohme, H. Klein, R. Marquard (Eds.), Feed Microscopy (Atlas for the Microscopic Examination of Feed Containing Vegetable and Animal Products), Mixed Feed Library, Bergen/Dumme D. (310 pages, hard cover, price: [euro]128.00/US$ 149.00, ISBN 3-86037-255-6)., Animal Feed Science and Technology, Volume 128, Issues 3-4, 28 June 2006, Pages 344-345, ISSN 0377-8401, DOI: 10.1016/j.anifeedsci.2006.02.012.
(http://www.sciencedirect.com/science/article/B6T42-4JKHP7Y-1/2/7263a548a2feeefe2866dc19ad99fa38)

Duncan Ongeng, Frank Devlieghere, Johan Debevere, Jozef Coosemans, Jaak Ryckeboer, The efficacy of electrolysed oxidising water for inactivating spoilage microorganisms in process water and on minimally processed vegetables, International Journal of Food Microbiology, Volume 109, Issue 3, 15 June 2006, Pages 187-197, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2005.12.013.
(http://www.sciencedirect.com/science/article/B6T7K-4JCBN1T-4/2/659430332522a10e389a3977d716058a)
Abstract:
The efficacy of Electrolysed Oxidising Water (EOW) for inactivating spoilage microorganisms in process water and on minimally processed vegetables was investigated. The direct effect of EOW on three important spoilage bacteria namely; Pseudomonas fluorescens, Pantoea agglomerans or Rahnella aquatilis was determined by inoculating tap water or 'artificial process water' with approximately 8 log CFU/ml pure culture and electrolysing the resultant solutions. The three

bacteria were each reduced to undetectable levels at low (0.5 A) and relatively higher levels (1.0 A) of current in tap water and 'artificial process water', respectively. The residual effect of EOW on P. fluorescens, P. agglomerans or R. aquatilis was determined by incubating at room temperature 1 ml (approximately 9 log CFU/ml) pure culture suspensions in 9 ml of EOW-T (EOW produced from tap water), EOW-A (EOW produced from 'artificial process water' supplemented with approximately 60.7 mg Cl-/l and 39.3 mg Na+/l) or deionised water (control) for 0, 15, 45 or 90 min. The bactericidal activity of both EOW-T and EOW-A increased with the concentration of free oxidants and incubation period and the three bacteria were completely reduced at free oxidants-incubation period combinations of 3.88 mg/l-45 min and 5.1 mg/l-90 min in EOW-T and EOW-A, respectively. Two types of industrial vegetable process water; salad-mix and soup process water, which had each a total psychrotrophic count of approximately 8 log CFU/ml were then electrolysed. Without any NaCl addition, only 1.2 and 2.1 log reductions of the psychrotrophs in soup and salad-mix process water was attained respectively. Supplementation of the process water with approximately 60.7 mg Cl-/l and 39.3 mg Na+/l afterwards resulted in complete reduction of the psychrotrophic count in both process waters, but soup process water required relatively higher levels of current compared to salad-mix water. Finally, fresh-cut lettuce was washed in EOW-T containing 3.62 mg free oxidants/l, EOW-IP (EOW produced from industrial process water) containing 2.8 mg free oxidants/l or tap water (control) for 1 or 5 min. Washing the vegetables for 1 min in EOW-T resulted in 1.9, 1.2, and 1.3 log reductions of psychrotrophs, lactic acid bacteria and Enterobacteriacae, respectively, which increased to 3.3, 2.6, and 1.9 log reductions after washing for 5 min instead. EOW-IP tested in this work had no bactericidal effect on the microflora of fresh-cut lettuce. Electrolysis could therefore be used to decontaminate process water for vegetable pre-washing and to sanitise tap water for final rinsing of vegetables, respectively.
Keywords: Electrolysed oxidising water; Decontamination; Pseudomonas fluorescens; Pantoea agglomerans; Rahnella aquatilis; Process water; Minimally processed vegetables

Olaf Erenstein, James Sumberg, Andreas Oswald, Virginie Levasseur, Harouna Kore, What future for integrated rice-vegetable production systems in West African lowlands?, Agricultural Systems, Volume 88, Issues 2-3, June 2006, Pages 376-394, ISSN 0308-521X, DOI: 10.1016/j.agsy.2005.07.006.
(http://www.sciencedirect.com/science/article/B6T3W-4H0BT63-3/2/573517ef6499afc27268cbc1da7ce677)
Abstract:
In this paper we present a framework for the analysis of integrated rice-vegetable production systems in West African lowlands. The framework is built around the proposition that to gain the benefits of rice-vegetable interaction, integration can take place to varying degrees along three dimensions: space, time and management. Three examples of rice-vegetable integration are then explored in the light of this framework. These examples illustrate varying degrees of spatial and management integration, but little temporal integration. Temporal integration is constrained in large part by the limited degree of water control found in most West African lowlands. Research, policy and development implications are then explored. A major conclusion is that in the short-term integrated rice-vegetable production is unlikely to be an important part of a pro-poor development agenda.
Keywords: Integrated production systems; Rice-vegetable interaction; West Africa; Lowland use; Dimensions of integration

Janet L. Lawrence, Casey W. Hoy, Parwinder S. Grewal, Spatial and temporal distribution of endemic entomopathogenic nematodes in a heterogeneous vegetable production landscape, Biological Control, Volume 37, Issue 3, June 2006, Pages 247-255, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2006.02.002.

(http://www.sciencedirect.com/science/article/B6WBP-4JKRTPV-1/2/70e8ec85aa9beab5fdeceb5a6f19bee9)

Abstract:
Entomopathogenic nematodes within the families Steinernematidae and Heterorhabditidae (Order: Rhabditida) are potential biological control agents for many soil-dwelling vegetable pests. However, their low persistence and efficacy after field releases have resulted in limited use in pest management programs. Understanding the factors regulating natural populations of entomopathogenic nematodes may provide insight into practices to conserve populations within production systems. A series of investigations were conducted within a vegetable production area in Willard, Ohio during 2000-2003 to gain insight into the population ecology of endemic populations of entomopathogenic nematodes. A total of 440 sites across four habitats associated with the production landscape were sampled to ascertain the natural occurrence of these beneficial nematodes. Habitats included cultivated areas, grassy banks adjacent to cultivated areas, undisturbed shrub lands and forests. Twelve sites along grassy banks were monitored over a growing season to estimate associations between abiotic and biotic factors and endemic populations. Entomopathogenic nematodes were only detected along grassy banks adjacent to the cultivated areas; nematodes were recovered from 15 to 30% of sites sampled in 2001 and 2002, respectively. Two species of nematodes were isolated, Heterorhabditis bacteriophora Poinar and Steinernema feltiae Filipjev. H. bacteriophora was the most prevalent nematode species and was recovered from 60% of positive samples. Nematode populations varied temporally and spatially along grassy banks; mean population density over the growing period was 1313 infective juveniles/m2. Neither macro- nor microarthropod communities nor soil temperature differed between sites at which nematodes were detected and those at which nematodes were not detected. Soil moisture, however, was associated with the occurrence and persistence of nematodes along grassy banks; mean soil moisture at sites at which nematodes were detected and those sites at which nematodes were not detected was 37.3 and 26.8%, respectively. Water management is an important component of vegetable production and our results suggest that soil moisture manipulation would be important in the establishment and sustained presence of entomopathogenic nematode populations within cultivated areas over the growing season.
Keywords: Infective juvenile; Population ecology; Persistence; Abiotic and biotic factors; Habitat characteristics; Heterorhabditis sp.; Steinernema sp.

Yesim Ozogul, John I. Ahmad, Mike Hole, Fatih Ozogul, Simeon Deguara, The effects of partial replacement of fish meal by vegetable protein sources in the diet of rainbow trout (Onchorynchus mykiss) on post mortem spoilage of fillets, Food Chemistry, Volume 96, Issue 4, June 2006, Pages 549-561, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.02.043.
(http://www.sciencedirect.com/science/article/B6T6R-4G4N0GN-3/2/a59d99a80104e2612043129b3cc92134)

Abstract:
Five test diets were formulated with decreasing levels of fish meal (up to 50%) replaced by alternative protein sources. Rainbow trout were fed the experimental diets for 12 weeks.The effects of feed ingredients on spoilage of Oncorhynchus mykiss in ice and under MAP/ice (40% CO2, 30% N2 and 30% O2) were investigated in terms of sensory, chemical and microbiological analyses. The results showed that the trout in MAP/ice was rejected at 14 days, after sensory analysis, due to excessive drip, whereas trout in ice were found to be acceptable even after 14 days of storage. However, cooked trout fillets, under both storage conditions, were rejected at 17 days. Fish in ice produced higher K values and higher concentrations of biogenic amines during the storage period of 17 days than the fish in MAP/ice. Bacteria grew more quickly in rainbow trout kept in ice than in MAP/ice. MAP/ice storage extended the shelf life of rainbow trout by approximately 2 days compared to ice storage alone in terms of microbiological analyses.
Keywords: Rainbow trout; Alternative protein sources; MAP; Storage life

Hyun-Pa Song, Dong-Ho Kim, Cheorun Jo, Cheol-Ho Lee, Kyong-Soo Kim, Myung-Woo Byun, Effect of gamma irradiation on the microbiological quality and antioxidant activity of fresh vegetable juice, Food Microbiology, Volume 23, Issue 4, June 2006, Pages 372-378, ISSN 0740-0020, DOI: 10.1016/j.fm.2005.05.010.
(http://www.sciencedirect.com/science/article/B6WFP-4H7TCXH-1/2/05c60055d6073446d1602cbe628e2cac)
Abstract:
A fresh vegetable juice has become a new functional food available for dieting and health. However, it poses a microbiological hazard to the consumer because it is distributed and consumed without any cooking. In this study, we applied the radiation sterilization of fresh vegetable juice, and the effectiveness of [gamma] irradiation for inactivating Salmonella typhimurium and Escherichia coli in the carrot and kale juice was investigated. D10 values of S. typhimurium in the carrot and kale juice were 0.445+/-0.004 and 0.441+/-0.006 kGy, while those of E. coli were 0.301+/-0.005 and 0.299+/-0.006 kGy. The test organisms (inoculated at 107 cfu/ml) were eliminated by irradiation at 3 kGy. The total phenol contents of the irradiated juice during 3 days of storage at a cold chain temperature (10 [degree sign]C) increased significantly ($P<0.05$), while those of the non-irradiated juice decreased ($P<0.05$). The antioxidant capacity of the irradiated carrot juice was higher than that of the non-irradiated control. Therefore, it was concluded that irradiation treatments of carrot and kale juice improve the microbiological safety with maintaining or even enhancing the antioxidative activity.

A.B. Martin-Diana, D. Rico, J. Frias, J. Mulcahy, G.T.M. Henehan, C. Barry-Ryan, Whey permeate as a bio-preservative for shelf life maintenance of fresh-cut vegetables, Innovative Food Science & Emerging Technologies, Volume 7, Issues 1-2, June 2006, Pages 112-123, ISSN 1466-8564, DOI: 10.1016/j.ifset.2005.08.002.
(http://www.sciencedirect.com/science/article/B6W6D-4HNSJM6-1/2/8678f7e9c7423f5fd5dee21aa2bf6c3d)
Abstract:
Whey permeate at different concentrations (0.5%, 1.5% and 3%) was used as natural sanitizing agent in the washing treatment of fresh-cut lettuce and carrots. These treatments were compared with a chlorine 120 ppm widely used in the industry. Microbiological, quality (colour changes, browning-related enzymes, headspace gas composition, textural changes and sensory analysis) and nutritional (ascorbic acid and carotenoids) markers were monitored over 10 days in fresh-cut lettuce and carrot packages stored at 4 [degree sign]C. Whey permeate at 3% resulted in equivalent or better microbial load reduction than chlorine. Although lower concentration of whey permeate produced minor initial reduction, microbial counts at the end of the storage were below the recommended levels (108 CFU/g) for safety of fresh-cut vegetables. Sensory analysis panel considered all the samples of fresh-cut lettuce acceptable. However, in the sensory results the sliced carrots treated with 3% whey permeate and chlorine scored lower acceptability due to higher surface whiteness, although these samples had lower microbial loads. Three percent WP controlled the browning-related enzymes better than 0.5%, 1.5% WP and chlorine and consequently the browning. However, this reduction in browning-related enzymes did not result in a lower browning appearance to visual observation during the 10 storage days. The use of high concentrations of WP accelerated the loss of ascorbic acid and carotenoids. These results suggest that whey permeate could be a promising alternative to chlorine for sanitizing fresh-cut vegetables.Industrial relevance
Many attempts have been made to increase the use of whey, a valuable by-product of cheese processing, and many attempts have been made to increase shelf life of fresh-cut fruits and vegetables. This paper takes an interesting approach by attempting to use whey permeate as antimicrobial agent. Whey permeate solution proved successful in controlling total counts via a

washing step of fresh cut vegetables. Although this does not reduce the amount of whey released, it could provide use as antimicrobial prior to discarding.
Keywords: Whey permeate; Shelf life; Fresh-cut vegetables; Lettuce; Carrot

Kunchit Judprasong, Somsri Charoenkiatkul, Pongtorn Sungpuag, Kriengkrai Vasanachitt, Yupaporn Nakjamanong, Total and soluble oxalate contents in Thai vegetables, cereal grains and legume seeds and their changes after cooking, Journal of Food Composition and Analysis, Volume 19, Issue 4, After Processing: The Fate of Food Components, June 2006, Pages 340-347, ISSN 0889-1575, DOI: 10.1016/j.jfca.2005.04.002.
(http://www.sciencedirect.com/science/article/B6WJH-4GTVYJY-1/2/e8b02d305afa13902f58dc1e4b2ffcb2)
Abstract:
This study was conducted to determine soluble and total oxalate contents in common vegetables, cereal grains and legume seeds and the effect of household cooking on these substances. Each food sample was randomly purchased from three main representative markets in metropolitan area of Bangkok, Thailand. Soluble and total oxalates were determined by high-performance liquid chromatography (HPLC). The limit of quantitation for the oxalates was 3 mg/100 g.
All studied vegetables contained relatively small amounts of total oxalate (<100 mg/100 g), except chinese convolvulus (Lpomoea reptans), acacia pennata (Acacia pennata), and cultivated bamboo shoot (Bambusa spp.), contained total oxalate more than 150 mg/100 g which can be significantly reduced after cooking by boiling. Among the legume seeds, soybeans (Glycine max (L.) Merrill) and peanuts (Arachis hypogaea L.) contained highest and moderate amounts of total oxalate, 204+/-14 mg and 142+/-35 mg/100 g, respectively. Rice contained negligible amount of total oxalate (<3 mg/100 g). There was significant reduction ($P<0.05$) in total oxalate due to cooking by boiling, percentage loss ranged form 18% in coconut heart top stems (Cocos nucifera Linn.) to 76% in A. pennata. Similar findings appeared in soluble oxalate, significant loss ($P<0.05$) ranged from 30% in cooked white stems swamp morning glory (Lpomoea aquatica, Forsk) to 83% in cooked cultivated bamboo shoot (Bambusa spp.). Loss of oxalates in various foods is likely due to their leaching loss in cooking water.
Keywords: Total oxalate; Soluble oxalate; Vegetables; Cereals; Legume seeds; Effect of cooking

Marzouk Benali, Mouloud Amazouz, Drying of vegetable starch solutions on inert particles: Quality and energy aspects, Journal of Food Engineering, Volume 74, Issue 4, June 2006, Pages 484-489, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.01.045.
(http://www.sciencedirect.com/science/article/B6T8J-4G4PBHY-2/2/fef04540cb5c86f5517d904502b2cca3)
Abstract:
The paper deals with the energy efficiency of drying vegetable starch solutions on inert particles and the product quality. The experimental results performed in a continuous conical jet spouted bed with Teflon particles have shown that, for a given feed rate of vegetable starch solution, the product lightness varies with the initial moisture content and the position of an atomizing device. The starch damage index was below 2.5% and the lightness of the dried starch was in the range 94.1-96.1. A drying efficiency of 90 +/- 3% is achieved with the proposed drying method.
Keywords: Color; Starch damage; Powder; Energy efficiency; Drying efficiency

Marion F. Zabinski, Tracy Daly, Gregory J. Norman, Joan W. Rupp, Karen J. Calfas, James F. Sallis, Kevin Patrick, Psychosocial Correlates of Fruit, Vegetable, and Dietary Fat Intake among Adolescent Boys and Girls, Journal of the American Dietetic Association, Volume 106, Issue 6, June 2006, Pages 814-821, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.03.014.
(http://www.sciencedirect.com/science/article/B758G-4K0S4FM-B/2/6215ad5234ace0174538b6a3e2fbdfe2)

Abstract: Objective
This study examined whether hypothesized psychosocial correlates of behavior change (family/peer influence, pros, cons, self-efficacy, parent/child change strategies, and household eating rules) are associated with consumption of fruits, vegetables, and dietary fat among adolescent boys and girls.Design
This cross-sectional study used questionnaires to assess psychosocial variables and multiple 24-hour recall interviews to assess dietary intake (daily servings of fruits and vegetables and percentage energy intake from dietary fat).Subjects
In this study, 878 adolescents (53.6% female, 57.9% white, mean age 12.8 years, age range 11 to 15 years) completed questionnaires.Statistical Analyses Performed
Hierarchical linear regressions were conducted on the entire sample as well as on subgroups based on sex and age (young/old).Results
Results indicated that child behavior change strategies, decisional balance, and household rules were related to percentage energy intake from total fat, whereas child behavior change strategies, family influence, and household rules were related to daily servings of fruit and vegetables. More psychosocial correlates were found for older than for younger adolescents.Conclusions
Both psychological and social correlates of adolescent eating behaviors were identified, and correlates differed somewhat by adolescent subgroup. Based on these findings, promising intervention strategies that include the following should be evaluated: helping adolescents alter decisional balance, teaching behavior-change strategies, and helping parents support children's dietary changes and institute supportive household rules.

Helen Henry, Kathy Reimer, Chery Smith, Marla Reicks, Associations of Decisional Balance, Processes of Change, and Self-Efficacy with Stages of Change for Increased Fruit and Vegetable Intake among Low-Income, African-American Mothers, Journal of the American Dietetic Association, Volume 106, Issue 6, June 2006, Pages 841-849, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.03.012.
(http://www.sciencedirect.com/science/article/B758G-4K0S4FM-G/2/a0570f7f75db5b772c0b0299d5d6fd76)
Abstract: Objective
To determine the relationship between stage of change and decisional balance, processes of change, and self-efficacy variables of the Transtheoretical Model to increase fruit and vegetable consumption by low-income, African-American mothers, and to assess the usefulness of the model for intervention efforts.Design
We used a cross-sectional questionnaire design with a food frequency questionnaire and a staging algorithm to classify women by stage of change before enrollment. We used scaled questionnaire items based on think-aloud data to measure self-efficacy, processes of change, and pros and cons to increasing fruit and vegetable intake and variety.Subjects/setting
We recruited a convenience sample of low-income, African-American mothers (n=420) aged 18 to 45 years with children <12 years of age to complete questionnaires at community-based sites.Statistical Analyses Performed
Analysis of variance, principal component analysis, [chi]2 tests, correlation, and regression analyses were conducted.Results
Perceptions of benefits for health and planning meals were stronger for women in later stages compared with earlier stages. The same relationship was observed for the use of processes of change related to becoming aware of health benefits and engaging in enabling behaviors, and variety of fruits and vegetables consumed. Self-efficacy based on eating fruits and vegetables for various eating occasions and in difficult situations was greater for women in later stages compared to earlier stages.Conclusions

Interventions for women in earlier stages should include making women aware of health benefits, increasing self-efficacy, and improving ability to make plans and engage in behaviors to increase intake.

Bing CAO, Fa-Yun He, Qiu-Ming Xu, Bin Yin, Gui-Xin CAI, Denitrification Losses and N2O Emissions from Nitrogen Fertilizer Applied to a Vegetable Field, Pedosphere, Volume 16, Issue 3, June 2006, Pages 390-397, ISSN 1002-0160, DOI: 10.1016/S1002-0160(06)60067-2.
(http://www.sciencedirect.com/science/article/B82XV-4K30SB3-H/2/81563d29f2d6b62589620a2039af020a)
Abstract: ABSTRACT
A field experiment was conducted on Chinese cabbage (Brassica campestris L. ssp. pekinensis (Lour.) Olsson) in a Nanjing suburb in 2003. The experiment included 4 treatments in a randomized complete block design with 3 replicates: zero chemical fertilizer N (CK); urea at rates of 300 kg N ha-1 (U300) and 600 kg N ha-1 (U600), both as basal and two topdressings; and polymer-coated urea at a rate of 180 kg N ha-1 (PCU180) as a basal application. The acetylene inhibition technique was used to measure denitrification (N2 + N2O) from intact soil cores and N2O emissions in the absence of acetylene. Results showed that compared to CK total denitrification losses were significantly greater ($P < 0.05$) in the PCU180, U300, and U600 treatments, while N2O emissions in the U300 and U600 treatments were significantly higher ($P < 0.05$) than CK. In the U300 and U600 treatments peaks of denitrification and N2O emission were usually observed after N application. In the polymer-coated urea treatment (PCU180) during the period 20 to 40 days after transplanting, higher denitrification rates and N2O fluxes occurred. Compared with urea, polymer-coated urea did not show any effect on reducing denitrification losses and N2O emissions in terms of percentage of applied N. As temperature gradually decreased from transplanting to harvest, denitrification rates and N2O emissions tended to decrease. A significant ($P < 0.01$) positive correlation occurred between denitrification ($r = 0.872$) or N2O emission ($r = 0.781$) flux densities and soil temperature in the CK treatment with a stable nitrate content during the whole growing season.
Keywords: denitrification loss; N2O emission; polymer-coated urea; urea; vegetable field

P.R. Shorten, T.K. Soboleva, A.B. Pleasants, J.-M. Membre, A risk assessment approach applied to the growth of Erwinia carotovora in vegetable juice for variable temperature conditions, International Journal of Food Microbiology, Volume 109, Issues 1-2, 25 May 2006, Pages 60-70, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2006.01.011.
(http://www.sciencedirect.com/science/article/B6T7K-4JCCH1P-1/2/a0cbfb96defd6a339d6d10d64bca8132)
Abstract:
Risk assessment for food spoilage relies on probabilistic models of microbial growth to predict the likelihood that microbial populations will exceed predefined spoilage levels. To assist in the design and management of industrial food quality systems, predictive microbiological models have to incorporate major risk factors such as the variability in the microbial strain, environment and initial contamination levels. In addition, the application of results measured under laboratory conditions to the less controlled environment of an industrial process usually also involves uncertainty. Extra information regarding this uncertainty must be factored into industrial microbial risk assessment. In this paper, based on our previous analysis of the growth of Erwinia carotovora we show how different factors contribute to the risk of microbial spoilage of vegetable juice and we demonstrate an effective way of including these factors into risk assessment models. The association of risk components with different unavoidable and manageable factors is also valuable for the development of optimal strategies for reducing microbial risk.
Keywords: Predictive microbiology; Food quality; Uncertainty; Variability

Dena R. Herman, Gail G. Harrison, Eloise Jenks, Choices Made by Low-Income Women Provided with an Economic Supplement for Fresh Fruit and Vegetable Purchase, Journal of the American Dietetic Association, Volume 106, Issue 5, May 2006, Pages 740-744, ISSN 0002-8223, DOI: 10.1016/j.jada.2006.02.004.
(http://www.sciencedirect.com/science/article/B758G-4JTJ7J1-Y/2/2234eb4d04d9af56ac9c58a8b79874bb)
Abstract:
Vouchers for fresh fruit and vegetable purchase were provided to low-income women participating in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Los Angeles, CA. As the program is currently constituted, the supplemental foods provided contain no fresh produce except for carrots for exclusively breastfeeding women. This study investigated whether providing supplemental financial support specifically for purchase of fresh fruits and vegetables would result in high uptake of the supplement, and what the individuals would choose to purchase. A total of 602 women enrolling for postpartum services at three selected WIC program sites in Los Angeles were recruited. Sites were assigned to intervention with vouchers redeemable at a local supermarket, a nearby year-round farmers' market, and a control site with a minimal nonfood incentive. Vouchers were issued bimonthly, at the level of US $10/wk, and carried out for 6 months. Of 454 participants who completed the study (75.4%), 86% were Hispanic, 7% non-Hispanic black, and 7% of other ethnic backgrounds. Assessment of uptake was by voucher redemption rates and was approximately 90% for both groups. Participants reported purchasing a wide variety of items at both sites. The 10 most frequently mentioned items were oranges, apples, bananas, peaches, grapes, tomatoes, carrots, lettuce, broccoli, and potatoes. In conclusion, low-income women used the supplement provided almost fully, and purchased a wide variety of fresh fruits and vegetables for their families. No particular barriers arose to redemption of the vouchers by either the participants or the retail vendors.

Eric Dubois, Catherine Hennechart, Nathalie Deboosere, Ghislaine Merle, Odile Legeay, Christian Burger, Marie Le Calve, Bertrand Lombard, Virginie Ferre, Ousmane Traore, Intra-laboratory validation of a concentration method adapted for the enumeration of infectious F-specific RNA coliphage, enterovirus, and hepatitis A virus from inoculated leaves of salad vegetables, International Journal of Food Microbiology, Volume 108, Issue 2, 25 April 2006, Pages 164-171, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2005.11.007.
(http://www.sciencedirect.com/science/article/B6T7K-4HYMVXK-4/2/0541f250e59d3f70b8a02182146c0152)
Abstract:
Salad vegetables exposed to fecal contamination may cause outbreaks of hepatitis or gastro-enteritis if they are eaten raw. A procedure, based on elution with phosphate-buffered saline and concentration by filtration through membrane filters, was developed for the recovery of enteric viruses from salad leaves. The method was evaluated using lettuce leaves inoculated with hepatitis A virus (HAV), poliovirus, and MS2 bacteriophage. In addition, this method was validated by an intra-laboratory study using leaves of various salad vegetables inoculated with MS2 phage. The French standard NF V 03-110 was used to establish the general principle and the technical protocol of the validation procedure. Linear regression models describing the quantitative reactions were good fits to data in the whole range of viral concentrations tested, which was from about 1 to 4 log plaque-forming units (PFU) per 25 g of lettuce. The fractions of inoculated viruses recovered were estimated to be about 64% for HAV, 18% for poliovirus, and 29% for MS2. No significant effect of the food matrix was found using various types of salad vegetable (butter lettuce, iceberg lettuce, romaine lettuce, witloof chicory, curly endive, corn salad, rocket and watercress). Moreover, the variance of the results was constant for all levels of virus contamination within the experimental range. Intermediate reproducibility experiments were also performed to allow calculation of the uncertainty factor, which was found to be 0.58 log PFU/25 g. When used in

association with phage enumeration, this validated procedure is rapid enough to be used for screening salad vegetables for evaluation of the efficacy of processes for control of pathogenic microorganisms on such foods.
Keywords: Validation; Filtration; Enumeration; Enteric viruses; Salad vegetables

Faridah Abas, Nordin H. Lajis, D.A. Israf, S. Khozirah, Y. Umi Kalsom, Antioxidant and nitric oxide inhibition activities of selected Malay traditional vegetables, Food Chemistry, Volume 95, Issue 4, April 2006, Pages 566-573, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.01.034.
(http://www.sciencedirect.com/science/article/B6T6R-4FPN9T9-5/2/7e5dfff33a3385b300c975a3fdc223f5)
Abstract:
The antioxidant properties and the effect on nitric oxide (NO) production, in lipopolysaccharide-activated macrophages, of 12 traditional vegetables of the Malaysian Malays, including Pithecellobium confertum, Averrhoa bilimbi, Portulaca oleracea, Solanum torvum, Solanum nigrum, Persicaria tenella, Cosmos caudatus, Pandanus amaryllifolius, Curcuma mangga, Ocimum basilicum, Anacardium occidentale and Melicope ptelefolia, were investigated. Antioxidant activity of the methanolic extracts was evaluated by measuring the production of hydroperoxide and its degradation product (malonaldehyde) resulting from linoleic acid oxidation using ferric thiocyanate and thiobarbituric acid methods, respectively. Radical-scavenging potential was also evaluated using the 1,1-diphenyl-2-picrylhydrazyl radical. Griess assay was used to assess NO-inhibitory activity of the extracts. All species, except P. confertum, S. torvum and P. amaryllifolius, showed antioxidant activity. M. ptelefolia, P. oleracea and P. tenella showed in vitro activity on NO inhibition in murine peritoneal macrophages, whereas other plants showed no significant activity.
Keywords: Antioxidant activity; Traditional vegetables; Ferric thiocyanate; Thiobarbituric acid; 1,1-Diphenyl-2-picrylhydrazyl radical; Nitric oxide inhibition

Sara C. Cunha, M.B.P.P. Oliveira, Discrimination of vegetable oils by triacylglycerols evaluation of profile using HPLC/ELSD, Food Chemistry, Volume 95, Issue 3, April 2006, Pages 518-524, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.03.029.
(http://www.sciencedirect.com/science/article/B6T6R-4G7GFXT-C/2/c50df5edc749bae9ec3ef54eccdae5f4)
Abstract:
This paper describes an HPLC procedure for the determination of triacylglycerol (TAG) profile in vegetable oils. Sample preparation consisted in the dissolution of the oils in acetone and filtration. The chromatographic separation was achieved using a Kromasil 100 C18 column (at 25 [degree sign]C) and gradient elution with acetone and acetonitrile. Elution was performed at a solvent flow rate of 1 mL/min. Detection was accomplished with an evaporative light scattering detector (ELSD), with the following settings: evaporator temperature 40 [degree sign]C, air pressure 3.5 bars and photomultiplier sensitivity 6. TAG peaks were identified taking into account the logarithms of [alpha] in relation to homogeneous TAG (relative retention times to triolein) and their quantification was based on the internal normalization method.
The linearity, precision and relative response of the method were examined. A total of 15 peaks were separated, identified, and quantified based on the relative percentage peak area. After validation the methodology was applied to eight vegetable oils including olive oil in a total of 52 samples. The proposed method appears to be an adequate method for quality control and a useful tool for authenticity issues.
Keywords: HPLC/ELSD; Triacylglycerol profile; Vegetable oils; Olive oil

Francisco Prados, Antonio Pino, Francisco Rincon, Montserrat Vioque, Jose Fernandez-Salguero, Influence of the frozen storage on some characteristics of ripened Manchego-type cheese

manufactured with a powdered vegetable coagulant and rennet, Food Chemistry, Volume 95, Issue 4, April 2006, Pages 677-682, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.06.044.
(http://www.sciencedirect.com/science/article/B6T6R-4H9G4G5-2/2/d9474ea51f18484e37d90f08cade4571)
Abstract:
A study was made of the effect of freezing and nine months' frozen storage on the chemical, microbiological and sensorial characteristics of fully ripened Manchego-type cheese. Chemical components, water activity and nitrogen compounds were not altered by freezing and frozen storage. Soluble and non-protein nitrogen were significantly higher in cheeses produced with the powdered vegetable coagulant (PVC) compared to those made with rennet. Proteolysis continued slowly during frozen storage, with higher amino acid and ammonia nitrogen rates at the end of the storage period. Micrococci (P-value <0.05, in cheese made with PVC) and staphylococci counts tended to decrease during frozen storage; however total viable, lactic acid bacteria and mold-yeasts counts were similar throughout the nine months. Changes in sensorial parameters were observed (P-value <0.05) throughout freezing and frozen storage, affecting the creaminess of cheeses made with chymosin and the taste intensity and salty taste of cheese obtained with vegetable coagulant. Cheeses obtained with PVC proved to have a more acid taste and greater taste intensity ($P < 0.01$) as well as displaying a more bitter taste, greater creaminess and lower degree of hardness (P-value <0.001) than those produced with rennet.
Keywords: Manchego-type cheese; Freezing; Frozen storage; Proteolysis; Microbiology; Organoleptic; Vegetable coagulant

Biao Huang, Xuezheng Shi, Dongsheng Yu, Ingrid Oborn, Karin Blomback, Timothy F. Pagella, Hongjie Wang, Weixia Sun, Fergus L. Sinclair, Environmental assessment of small-scale vegetable farming systems in peri-urban areas of the Yangtze River Delta Region, China, Agriculture, Ecosystems & Environment, Volume 112, Issue 4, March 2006, Pages 391-402, ISSN 0167-8809, DOI: 10.1016/j.agee.2005.08.037.
(http://www.sciencedirect.com/science/article/B6T3Y-4HG69FT-2/2/f810592d30fb67dff923da661a3bf105)
Abstract:
There is growing concern about food safety and environmental contamination in the rapidly expanding peri-urban interface in Asia. Here, we present an integrated study of farming practices and the quality of water, sediments, soils and agricultural products in small-scale vegetable farming systems in two contrasting peri-urban areas with different levels of industrial development in the Yangtze River Delta Region of China. Application of large amounts of cow manure to vegetables in Nanjing, a vegetable-based peri-urban area, had caused an accumulation of N, P, Cu, Zn and available Cd in soil. This resulted in high Cd in some vegetables and high concentrations of N and P in surface water. Because of a shorter history of vegetable production in Wuxi, an industrialized peri-urban area, the accumulation of N and P in soils was less, but high available Cd due to low soil pH associated with application of large amounts of inorganic fertilizers had resulted in high Cd in some vegetables. Heavy metal pollution in the Wuxi area mainly came from atmospheric deposition and discharge of effluent from factories and was higher than in the less industrialized area in Nanjing. Development and dissemination of strategies for more efficient use of fertilizers in vegetable farming could benefit both farm profitability and the environment and should be coupled with treatment of municipal waste before discharge and control of factory emissions. Bringing about change in farming, municipal and industrial practice will require good relationships amongst a number of stakeholders. The uncertain status of immigrant vegetable farmers in Wuxi hampers their interaction with agricultural service providers and local governance structures and effective channels for communication need to be established.
Keywords: Environmental assessment; N and P and heavy metals; Small-scale vegetable farming system; Peri-urban areas; China

A.I. Olives Barba, M. Camara Hurtado, M.C. Sanchez Mata, V. Fernandez Ruiz, M. Lopez Saenz de Tejada, Application of a UV-vis detection-HPLC method for a rapid determination of lycopene and [beta]-carotene in vegetables, Food Chemistry, Volume 95, Issue 2, March 2006, Pages 328-336, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2005.02.028.
(http://www.sciencedirect.com/science/article/B6T6R-4FWFVXK-1/2/729ef1b360b66e9e9cc84b1c2bb7fc46)
Abstract:
The purpose of this paper is to optimize an HPLC method for the determination of lycopene and [beta]-carotene in vegetables and compare it with a spectrophotometric standard method. Among the different conditions studied the most suitable ones for our samples were: extraction with hexane/acetone/ethanol (50:25:25 v/v/v), evaporation of the hexane layer, dissolution of the dry extract in THF/ACN/methanol (15:30:55 v/v/v) and injection on a C18 column with methanol/ACN (90:10 v/v) + TEA 9 [mu]M as mobile phase ([Phi] = 0.9 ml/min) and [lambda]detection = 475 nm. Samples considered for analysis were: tomato, carrot, pepper, watermelon, persimmon and medlar. The HPLC method proposed showed adequate reproducibility (RSD < 10.5%), accuracy (100-109% recovery) and sensitive detection limits (0.6 [mu]M for lycopene; 0.3 [mu]M for [beta]-carotene), with a simple preparation of the samples (one step direct extraction) and short run times (10 min) for the quantification of lycopene and [beta]-carotene.
Keywords: Lycopene; [beta]-carotene; HPLC; Vegetables

Ana Rodriguez-Bernaldo de Quiros, Helena S. Costa, Analysis of carotenoids in vegetable and plasma samples: A review, Journal of Food Composition and Analysis, Volume 19, Issues 2-3, March-May 2006, Pages 97-111, ISSN 0889-1575, DOI: 10.1016/j.jfca.2005.04.004.
(http://www.sciencedirect.com/science/article/B6WJH-4HCDJPP-1/2/3559705e7dd5dd04c67f57dc147bcf55)
Abstract:
Some carotenoids, besides provitamin A activity, have antioxidant capacity. These properties together with epidemiological studies that establish an association between a high vegetable intake and a lower risk of chronic degenerative diseases, such as certain types of cancer or cardiovascular diseases have increased the interest on the analysis of carotenoids in vegetable samples as well as in human plasma and serum samples. The present paper is an updated review on the analysis of carotenoids in vegetable, plasma and serum samples. Traditional liquid-liquid extraction, as well as supercritical fluid extraction (SFE) is reviewed. General aspects of chromatographic analysis are commented on, and examples of carotenoids separation in different samples are shown.
Keywords: Carotenoids; Analysis; Vegetables; Plasma; Review

C.M. Lopez Ortiz, M.S. Prats Moya, V. Berenguer Navarro, A rapid chromatographic method for simultaneous determination of [beta]-sitosterol and tocopherol homologues in vegetable oils, Journal of Food Composition and Analysis, Volume 19, Issues 2-3, March-May 2006, Pages 141-149, ISSN 0889-1575, DOI: 10.1016/j.jfca.2005.06.001.
(http://www.sciencedirect.com/science/article/B6WJH-4HS1D2C-5/2/51427575ef809cde152ad8eec7e2e372)
Abstract:
Tocopherols and phytosterols are important components of the unsaponifiable fraction in vegetable fatty foods. Their multiple beneficial effects in nutrition are to some extent well established; nevertheless they continue to be an object of intense research. In this work a simple method for simultaneous determination of both phytochemicals by reversed phase HPLC is proposed. The advantage of this method is a considerable reduction in time with simultaneous information on two types of analytes, whose health effects seem to be complementary. The

optimized method is applied to a set of olive and nut oils. The results fill gaps in the literature, and highlight the possible capacity of these phytochemicals to discriminate very similar oils.
Keywords: Tocopherol homologues; HPLC determination; [beta]-sitosterol

Jiyeon Chun, Junsoo Lee, Lin Ye, Jacob Exler, Ronald R. Eitenmiller, Tocopherol and tocotrienol contents of raw and processed fruits and vegetables in the United States diet, Journal of Food Composition and Analysis, Volume 19, Issues 2-3, March-May 2006, Pages 196-204, ISSN 0889-1575, DOI: 10.1016/j.jfca.2005.08.001.
(http://www.sciencedirect.com/science/article/B6WJH-4HCDJPP-5/2/4eb8e0af11196a890c0c794830cc9659)
Abstract:
Tocopherol and tocotrienol contents of raw fruits and vegetables and processed products were determined by saponification and normal phase liquid chromatography. All samples were either locally obtained or collected as part of the US Department of Agriculture's National Food and Nutrient Analysis Program (NFNAP). All fruits, vegetables and processed products were selected from the USDA Key Foods list. The study included 32 raw and processed fruits, 22 raw vegetables, various tomato products, baked beans, cooked potatoes, frozen broccoli and frozen green peas. [alpha]-Tocopherol ([alpha]-T) was detectable in all products and usually represented the vitamin E form present in highest quantity. [gamma]-Tocopherol ([gamma]-T) was higher than [alpha]-T only in cantaloupes, figs, red raspberries, cauliflower, button mushrooms, lettuce, and green peas. [alpha]- and [gamma]-Tocotrienols ([alpha]- and [gamma]-T3) were measurable in several fruit and vegetables but at levels usually less than 0.1 mg/100 g.
Keywords: Vitamin E; Fruits; Vegetables; HPLC; Analysis

Ebru Kavak Akpinar, Determination of suitable thin layer drying curve model for some vegetables and fruits, Journal of Food Engineering, Volume 73, Issue 1, March 2006, Pages 75-84, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2005.01.007.
(http://www.sciencedirect.com/science/article/B6T8J-4FJXN1F-1/2/0c9b05f91f504f737e38da27e3a7a2ef)
Abstract:
This study presents a mathematical modeling of thin layer drying of potato, apple and pumpkin slices in a convective cyclone dryer. In order to estimate and select the appropriate drying curve equation, 13 different models, which are semi-theoretical and/or empirical, were applied to the experimental data and compared according to their coefficients of determination (r, [chi]2), which were predicted by non-linear regression analysis using the Statistica Computer Program. Moreover, the effects of drying air temperature, velocity and sample area on the model constants and coefficients were also studied by multiple regression analysis. Consequently, of all the drying models, a semi-theoretical Midilli-Kucuk model was selected as the best one, according to r and [chi]2.
Keywords: Drying; Thin layer; Mathematical modelling

Christie Befort, Harsohena Kaur, Nicole Nollen, Debra K. Sullivan, Niaman Nazir, Won S. Choi, Laurie Hornberger, Jasjit S. Ahluwalia, Fruit, Vegetable, and Fat Intake among Non-Hispanic Black and Non-Hispanic White Adolescents: Associations with Home Availability and Food Consumption Settings, Journal of the American Dietetic Association, Volume 106, Issue 3, March 2006, Pages 367-373, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.12.001.
(http://www.sciencedirect.com/science/article/B758G-4JB9X3S-D/2/2e8e28946155f52f6cb81964148754f6)
Abstract: Objective

This study sought to explore home food availability and common settings of food consumption as correlates of fruit, vegetable, and fat intake among a sample of non-Hispanic black and non-Hispanic white adolescents.Participants and Design
Adolescents (n=144 black, 84 white) and their parents completed a cross-sectional survey in an urban adolescent health clinic. The adolescent survey included screening measures for fruit, vegetable, and fat intake and items on frequency of eating meals with family, while watching television, and at three types of restaurants. Parents provided information on home availability of foods.Main Outcomes
Correlates of fruit, vegetable, and fat consumption.Statistical Analysis
Spearman correlations for associations among variables, t tests for mean comparisons, and multiple stepwise regression conducted separately for black and white adolescents.Results
In multiple regression, home availability was not significantly associated with fruit, vegetable, or fat intake except for fruit intake among white adolescents only. Use of non-fast-food restaurants was the strongest positive predictor of vegetable intake. For both black and white adolescents, fast-food and buffet restaurant use and eating while watching television were the strongest predictors of fat intake.Conclusions
Compared with restaurant use and eating while watching television, home availability had a relatively small impact on fruit, vegetable, and fat consumption for both black and white adolescents. Intervention programs on adolescent nutrition should target not just availability of healthful foods, but also ease of access, such as the preparation of fruits and vegetables so that they are flavorful and ready to eat.

Monika Dalal, Ravi G. Dani, P. Ananda Kumar, Current trends in the genetic engineering of vegetable crops, Scientia Horticulturae, Volume 107, Issue 3, 6 February 2006, Pages 215-225, ISSN 0304-4238, DOI: 10.1016/j.scienta.2005.10.004.
(http://www.sciencedirect.com/science/article/B6TC3-4J2J3KM-2/2/acbb79a9862a703e37909ae7318a6190)
Abstract:
Vegetables play an important role in human nutrition and health. Cultivation of vegetable crops is an integral part of the agricultural economy of many developing countries. Vegetable crop productivity and quality are seriously affected by several biotic and abiotic stresses, which destabilize rural economies in many countries. Moreover, absence of proper post-harvest storage and processing facilities leads to qualitative and quantitative losses. In the past four decades, conventional breeding has contributed significantly for the improvement of vegetable yields, quality, post-harvest life, and resistance to biotic and abiotic stresses. However, there are many constraints in conventional breeding, which can only be overcome by advancements made in modern biology. In the last decade various traits such as biotic stress resistance, quality and storage life have been successfully engineered into vegetable crops and some of them have been commercialized. In recent years significant progress has been made to manipulate vegetable crops for abiotic stress tolerance, quality improvement and pharmaceutical and industrial applications. Although the progress in commercialization of transgenic vegetable crops has been relatively slow, transgenic vegetables engineered for nutraceutical and pharmaceutical use will contribute significantly to the value added agriculture in near future.
Keywords: Biotechnology; Vegetable crops; Biofarming; Abiotic stresses; Edible vaccines

Sergio R. Francisco, Mubarik Ali, Resource allocation tradeoffs in Manila's peri-urban vegetable production systems: An application of multiple objective programming, Agricultural Systems, Volume 87, Issue 2, February 2006, Pages 147-168, ISSN 0308-521X, DOI: 10.1016/j.agsy.2005.01.002.
(http://www.sciencedirect.com/science/article/B6T3W-4H9GRRG-1/2/d6f62b9e26b12ef71e0263b5ce6d4a4f)

Abstract:
This paper designed and developed a multi-objective programming (MOP) model to illustrate the dynamic relationship among technologies, productive activities, constraints and farmers' objectives in the peri-urban vegetable production system and use the model as an economic tool in analysing probable consequences of a given action or innovation on the farm. The best compromise solution was generated using four analytical steps, as follows: single-objective optimization (to determine the ideal and anti-ideal values of the objective functions); constrained optimization (to generate the set of Pareto non-dominated solutions); cluster analysis (to trim down efficient set into smaller homogeneous groups); and compromise programming (to determine where the best compromise solution lies).
The study then evaluated the income and risk impacts of technological innovation, specifically that of the technologies espoused by the AVRDC-Manila Peri-urban project for tomato and pak choi production during the hot-wet season. It was found that relative to the current production system, the entry of grafted tomato under rainshelter in the best compromise solution could increase farmer's income, however, the price-induced risk also increased. This effect was brought about by the increased yield of tomato that caused variance of income to increase. This result indicates that under existing conditions, the higher income offered by the costly technology will only be acceptable if farmers are willing to take on the higher risk. The MOP model also assessed how making capital more accessible to the farmers will affect the extent of adoption (proxied by area planted to the crop) of the technology. Results showed that income would increase when capital constraint was relaxed. This increase in income, however, was made possible largely by the change in crop mix, with a relatively small increase in area planted to tomato. With regard the level of risk, the change in production resulted in an increase in price-induced risk. The results seem to indicate that for a risk-averse farmer, the availability of capital will not guarantee a significant increase in adoption of capital-intensive technologies. Rather, the results will be a non-linear, non-additive expansion of the original cropping mix or a significant modification of the crop mix at the farm level.
Keywords: Multi-objective programming; Risk; Best compromise solution; Resource allocation; Peri-urban production systems

Stephen J. Kenney, Gary L. Anderson, Phillip L. Williams, Patricia D. Millner, Larry R. Beuchat, Migration of Caenorhabditis elegans to manure and manure compost and potential for transport of Salmonella newport to fruits and vegetables, International Journal of Food Microbiology, Volume 106, Issue 1, 15 January 2006, Pages 61-68, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2005.05.011.
(http://www.sciencedirect.com/science/article/B6T7K-4H9PMWP-4/2/7b313dc80037130595916e9840f48918)
Abstract:
A study was done to determine if a free-living, bacterivorous nematode, Caenorhabditis elegans, migrates to bovine manure, turkey manure, composted bovine manure, composted turkey manure, and manure-amended soil inoculated with Salmonella Newport. Movement of the worm to lettuce, strawberries, and carrots was also studied. C. elegans moved most rapidly to turkey manure and strawberries, with 35% and 60% of worms, respectively, associating with samples within 30 min. Survival and reproduction of C. elegans in test materials were not affected by the presence of S. newport. Bovine manure and bovine manure compost inoculated with S. newport (8.6 log10 CFU/g) were separately placed in the bottom of a glass jar and covered with a layer of soil (5 cm) inoculated (50 worms/g) or not inoculated with C. elegans. A piece of lettuce, strawberry, or carrot was placed on top of the soil before jars were sealed and held at 20 [degree sign]C for up to 10 days. In the system using soil inoculated with C. elegans, S. newport initially in bovine manure was detected on the surface of lettuce, strawberry, and carrot samples within 3, 1, and 1 days, respectively. The pathogen was detected on lettuce, strawberry, and carrot within 1, 7, and 1 days,

respectively, when initially present in bovine manure compost. With one exception, the pathogen was not detected on the produce over the 10-day incubation period when C. elegans was not present in the soil. Results indicate that C. elegans has the potential for transporting S. newport in soil to the surface of preharvest fruits and vegetables in contact with soil.
Keywords: Salmonella newport; Nematode; Caenorhabditis elegans; Manure; Compost; Fruit; Vegetable

Maria Rosaria Corbo, Matteo Alessandro Del Nobile, Milena Sinigaglia, A novel approach for calculating shelf life of minimally processed vegetables, International Journal of Food Microbiology, Volume 106, Issue 1, 15 January 2006, Pages 69-73, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2005.05.012.
(http://www.sciencedirect.com/science/article/B6T7K-4HK5SFW-1/2/8240470361a67f62beb27fe5e4b22170)
Abstract:
Shelf life of minimally processed vegetables is often calculated by using the kinetic parameters of Gompertz equation as modified by Zwietering et al. [Zwietering, M.H., Jongenburger, F.M., Roumbouts, M., van't Riet, K., 1990. Modelling of the bacterial growth curve. Applied and Environmental Microbiology 56, 1875-1881.] taking 5 x 107 CFU/g as the maximum acceptable contamination value consistent with acceptable quality of these products. As this method does not allow estimation of the standard errors of the shelf life, in this paper the modified Gompertz equation was re-parameterized to directly include the shelf life as a fitting parameter among the Gompertz parameters. Being the shelf life a fitting parameter is possible to determine its confidence interval by fitting the proposed equation to the experimental data. The goodness-of-fit of this new equation was tested by using mesophilic bacteria cell loads from different minimally processed vegetables (packaged fresh-cut lettuce, fennel and shredded carrots) that differed for some process operations or for package atmosphere. The new equation was able to describe the data well and to estimate the shelf life. The results obtained emphasize the importance of using the standard errors for the shelf life value to show significant differences among the samples.
Keywords: Gompertz equation; Microbial growth; Mathematical modeling; Shelf life; Fresh-cut vegetables

M. Muchuweti, J.W. Birkett, E. Chinyanga, R. Zvauya, M.D. Scrimshaw, J.N. Lester, Heavy metal content of vegetables irrigated with mixtures of wastewater and sewage sludge in Zimbabwe: Implications for human health, Agriculture, Ecosystems & Environment, Volume 112, Issue 1, January 2006, Pages 41-48, ISSN 0167-8809, DOI: 10.1016/j.agee.2005.04.028.
(http://www.sciencedirect.com/science/article/B6T3Y-4HBTDBR-1/2/26b81f8f46a0899fee62ffc4823fb2dd)
Abstract:
There is growing public concern in Zimbabwe over the illegal cultivation of vegetables on soils amended with sewage sludge or irrigated with admixtures of sewage and sewage sludge. Excessive accumulation of heavy metals in agricultural soils may not only result in environmental contamination, but lead to elevated heavy metal uptake by crops, which may affect food quality and safety. The work reported here studied heavy metal concentrations in crops irrigated with sewage sludge and sewage/sewage sludge admixtures at Firle Municipal Farm in Harare. The crops analysed in this study are heavily contaminated with the four regulated elements: Cd, Cu, Pb and Zn. This contamination is at its highest in two of the staple dietary crops maize and tsunga. Tsunga leaves contained 3.68 mg kg-1 Cd, over 18 times the permissible level by the EU standards (0.2 mg kg-1); Cu concentrations were 111 mg kg-1, 5 times the EU Standard (20 mg kg-1); concentrations of Pb were 6.77 mg kg-1, over 22 times the permissible levels allowed by both EU standards and UK guidelines (0.3 mg kg-1); Zn concentrations were 221 mg kg-1, over 4 times the guideline value (50 mg kg-1). The other plants (beans, maize, peppers and sugarcane)

also contained concentrations of heavy metals above the permissible levels. Furthermore, the concentrations observed in this study were higher than those reported by other workers who have examined vegetation from other contaminated sites. This study highlights the potential risks involved in the cultivation and consumption of vegetables on plots irrigated with sewage sludge, a practice which may place at risk the health of the urban population who consume these vegetables.
Keywords: Soils; Sewage sludge; Wastewater; Heavy metals; Green vegetables; Zimbabwe

M. Jaros, S. Pabis, Theoretical Models for Fluid Bed Drying of Cut Vegetables, Biosystems Engineering, Volume 93, Issue 1, January 2006, Pages 45-55, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2005.08.011.
(http://www.sciencedirect.com/science/article/B6WXV-4HG69VB-1/2/75d78ceb85ff241d533515f994dedc54)
Abstract:
The main aim of the presented study was to verify the hypothesis that a theoretically created system of equations describing the kinetics of the drying of a single solid body and enabling the modelling of both the first and second fluidisation period of the drying of solids such as vegetables can be a mathematical model of the fluidisation drying of cut vegetables. Logical verification made prior to the experiments, followed by empirical confirmation of the presented model based on the results of measurements of the drying of cut carrots and celery, corroborated the hypothesis to a degree allowing it to be considered verified. Moreover, theoretical models allowing the calculation of drying chamber capacity in designed fluid bed dryers have been suggested.

Vivek Singh, A.N. Garg, Availability of essential trace elements in Indian cereals, vegetables and spices using INAA and the contribution of spices to daily dietary intake, Food Chemistry, Volume 94, Issue 1, January 2006, Pages 81-89, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.10.053.
(http://www.sciencedirect.com/science/article/B6T6R-4FFGJGM-2/2/41ab2866f9e2136fd27bf0b61012d617)
Abstract:
Indian diet is primarily vegetarian and consists of various cereals and vegetables along with spices, often used in the preparation of curries. The nutritive potential of each ingredient, in terms of trace element contents, has been evaluated using instrumental neutron activation analysis (INAA). Four minor (Na, K, P and Cl) and 16 trace elements (Br, Co, Cr, Cs, Cu, Fe, Hg, Mn, Mo, Rb, Sb, Sc, Se, Sr, Th and Zn) have been determined in six cereals, nine vegetables and 20 spices and condiments, including two betel leaves. None of the carbohydrate-rich cereals or potato was rich in any of the essential elements but leafy vegetables showed higher contents of Fe and other nutrients. Fe/Zn is well correlated with Fe contents in cereals and spices. Out of various spices, cinnamon was most enriched in Fe, Co, Cr, Na, K, P and Zn, whereas turmeric and curry leaves were found to be particularly rich in Se. Cumin and mustard seeds were rich in Cu. Some environmental contaminants, such as Hg, Cr, Br and Th, were also present in significant amounts. An attempt has been made to evaluate the contribution of essential elements (Cr, Cu, Fe, Mn, P, Se and Zn) in spices to the daily dietary intake (DDI) through an Indian vegetarian diet. For a typical mixture of six commonly used spices, contributions of Cr, Fe, Mn and Zn, were found to be 7.5% of DDI in each case.
Keywords: Cereals; Vegetables; Spices; Essential nutrients; Instrumental neutron activation analysis; Daily dietary intake; Toxic contaminants

Ewa Cieslik, Anna Greda, Wiktor Adamus, Contents of polyphenols in fruit and vegetables, Food Chemistry, Volume 94, Issue 1, January 2006, Pages 135-142, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.11.015.

(http://www.sciencedirect.com/science/article/B6T6R-4FJKWS3-1/2/a5fafac8ec3206c4d3329e9fb0130a1d)
Abstract:
The work is an attempt at a model presentation, using a new multi-criteria mathematical method called the analytical hierarchy process, of polyphenol supply to human organisms from fruit and vegetables. On this basis, plant raw materials which supply polyphenols to the organism to the greatest extent and thus contribute to an improvement in health state of people in Poland were identified.
Keywords: Polyphenols; Fruit; Vegetables; Health effects; Analytic hierarchy process

Rocio Rodriguez, Ana Jimenez, Juan Fernandez-Bolanos, Rafael Guillen, Antonia Heredia, Dietary fibre from vegetable products as source of functional ingredients, Trends in Food Science & Technology, Volume 17, Issue 1, January 2006, Pages 3-15, ISSN 0924-2244, DOI: 10.1016/j.tifs.2005.10.002.
(http://www.sciencedirect.com/science/article/B6VHY-4HH81F5-2/2/fb2ef472ed4a6a5a592aa2e20c07a9d0)
Abstract:
The importance of food fibres has led to the development of a large and potential market for fibre-rich products and ingredients and nowadays there is a trend to find new sources of dietary fibre (DF), such as agronomic by-products that have traditionally been undervalued. Although there have been great achievements in this research field, further investigations are needed for designing `new food systems' that consider the precise functionality of DF from both technological and physiological points of view.
Present knowledge about different aspects of DF and future potential applications of fibres and/or its components as functional foods or ingredients will be the focus of this report.

Jyoti P. Tamang, Buddhiman Tamang, Ulrich Schillinger, Charles M.A.P. Franz, Michael Gores, Wilhelm H. Holzapfel, Identification of predominant lactic acid bacteria isolated from traditionally fermented vegetable products of the Eastern Himalayas, International Journal of Food Microbiology, Volume 105, Issue 3, 15 December 2005, Pages 347-356, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2005.04.024.
(http://www.sciencedirect.com/science/article/B6T7K-4GSBGHB-5/2/b371e4fc5e1e8c7dd84a5fcb31dc161f)
Abstract:
Gundruk, sinki and khalpi are lactic-fermented vegetable products of Sikkim in India, and inziangsang is a fermented leafy vegetable product of Nagaland and Manipur in India. A total of 65 samples of gundruk (25), sinki (12), khalpi (25) and inziangsang (3) were analysed for microbial counts. The population of lactic acid bacteria (LAB) as well as aerobic mesophilic counts were at the level of 107 cfu g- 1. Yeasts were detected only in few samples of sinki and khalpi. No moulds were detected. In order to identify the predominating organisms, a total of 269 strains of LAB were isolated from gundruk, sinki, khalpi and inziangsang samples. The phenotypic characteristics of these strains were determined followed by genotyping using RAPD-PCR, repetitive element PCR and species-specific PCR techniques. The major representatives of the LAB involved in these fermentations were identified as Lactobacillus brevis, Lactobacillus plantarum, Pediococcus pentosaceus, Pediococcus acidilactici and Leuconostoc fallax.
Keywords: Fermented vegetables; Gundruk; Sinki; Khalpi; Inziangsang; Lactobacillus; Leuconostoc; Pediococccus; rep-PCR; RAPD-PCR

Barbara Chaves, Stefaan De Neve, Pascal Boeckx, Oswald Van Cleemput, Georges Hofman, Screening organic biological wastes for their potential to manipulate the N release from N-rich

vegetable crop residues in soil, Agriculture, Ecosystems & Environment, Volume 111, Issues 1-4, 1 December 2005, Pages 81-92, ISSN 0167-8809, DOI: 10.1016/j.agee.2005.03.018.
(http://www.sciencedirect.com/science/article/B6T3Y-4GKWHPH-1/2/5736e74f93f0a93051dd445c72ab9bff)
Abstract:
In a laboratory study, organic biological wastes (OBW) were screened for their potential to manipulate the N release from vegetable crop residues in two phases: an immobilization and remineralization phase. During the first phase, celery leaves (Apium graveolens L.) were mixed with an immobilizer waste (straw, two green waste composts (GWC1 and GWC2), saw dust, paper sludge and tannic acid) in order to immobilize N released from crop residues. During the second phase, the treatments received a remineralizer waste (malting sludge, vinasses, molasses and dairy sludge) in order to stimulate remineralization of immobilized N. Straw showed the most pronounced N immobilization (on average 30.2 mg N kg-1). N immobilization with tannic acid, saw dust and GWC2 was slower and less pronounced (on average 16.4, 15.9 and 8.0 mg N kg-1, respectively). GWC1 and paper sludge immobilized almost no N. Only when GWC1 was mixed with vinasses, remineralization was observed (up to 55.4 mg N kg-1) during a 30 days period. For all other remineralizers, positive priming effects were scarce and short-lived. Manipulating the N release of N-rich crop residues may be a suitable method to reduce the nitrate concentration in soil after incorporation of crop residues. Especially, easily decomposable waste materials (i.e. low lignin content) with a large C:N ratio seem to have a potential to immobilize N. However, stimulating remineralization of immobilized N seems not easy to accomplish.
Keywords: C:N ratio; Crop residues; N mineralization; Organic waste materials; Priming effect

Helen M. Hendy, Keith E. Williams, Thomas S. Camise, 'Kids Choice' School lunch program increases children's fruit and vegetable acceptance, Appetite, Volume 45, Issue 3, December 2005, Pages 250-263, ISSN 0195-6663, DOI: 10.1016/j.appet.2005.07.006.
(http://www.sciencedirect.com/science/article/B6WB2-4H392SJ-3/2/9a79dbbcb762db5aae60d43da64b3b05)
Abstract:
The 'Kids Choice' school lunch program used token reinforcement, food choice, and peer participation to increase children's fruit and vegetable consumption without later drops in food preference sometimes found in past research and often called `overjustification effects.' Participants included 188 school children (92 boys, 96 girls; mean age =8.0; 95% Caucasian). After four baseline meals, children were randomly assigned for 12 meals to receive token reinforcement for eating either fruits or vegetables. Observers recorded fruit and vegetable consumption and provided token reinforcement by punching holes into nametags each day children ate their assigned foods, then once a week children could trade these tokens for small prizes. Fruit and vegetable preference ratings were gathered with child interviews during baseline, and during follow-up conditions two weeks and seven months after the token reinforcement program. Consumption increased for fruit and for vegetables and the increases lasted throughout reinforcement conditions. Two weeks after the program, preference ratings showed increases for fruit and for vegetables. Seven months later, fruit and vegetable preferences had returned to baseline levels, suggesting the need for an ongoing school lunch program to keep preferences high, but also showing no signs of 'overjustification effects' from the token reinforcement used in the 'Kids Choice' school lunch program.
Keywords: School lunch; Fruit & vegetables; Food choice; Overjustification effects

Giacomo Dugo, Lara La Pera, Vincenzo Lo Turco, Rosina Matarese Palmieri, Marcello Saitta, Effect of boiling and peeling on manganese content of some vegetables determined by derivative anodic stripping chronopotentiometry (dASCP), Food Chemistry, Volume 93, Issue 4, December 2005, Pages 703-711, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.12.037.

(http://www.sciencedirect.com/science/article/B6T6R-4FH0DBK-5/2/6d0dde98ae525ee90c2b446a30148e1c)
Abstract:
The purpose of this paper was two-fold: to optimise an analytical method based on derivative anodic stripping chronopotentiometry (dASCP) for reliable trace manganese determination in different fresh vegetables and aromatic plants, and to use this technique to asses the effect of boiling and peeling processing on their manganese content. The deposition potential was -1700 mV and the deposition time 120 s; in this conditions the limits of detection 8.0 ng kg-1 (ppt) and the accuracy of the method, assessed using certified reference materials, was within 95.0%. Among the studied fresh vegetables, the highest content of manganese was found in vegetables with dark green leaves as chicory and spinach (respectively, 3.5 and 3.3 mg/100 g), while vegetables with light green leaves as lettuce, together with carrots, garlic and pore mushrooms had manganese levels lower than 1.0 mg/100 g. Boiling processing cause a significant decrease of manganese levels in artichokes, tomatoes, chicory, garlic, mushrooms, peeled carrots and potatoes, spinach, and string beans (p [less-than-or-equals, slant] 0.005, ANOVA). Fennels, lettuce, marrow, unpeeled carrots and unpeeled potatoes did not show any statistical significant changes after boiling. Also peeling significantly influenced the content of manganese of carrots and potatoes (p [less-than-or-equals, slant] 0.01, ANOVA) and favoured manganese loss during boiling.
Keywords: Boiling; Derivative anodic stripping chronopotentiometry; Manganese; Peeling; Vegetables

Nihal Turkmen, Ferda Sari, Y. Sedat Velioglu, The effect of cooking methods on total phenolics and antioxidant activity of selected green vegetables, Food Chemistry, Volume 93, Issue 4, December 2005, Pages 713-718, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.12.038.
(http://www.sciencedirect.com/science/article/B6T6R-4FHKCWM-2/2/efd903079d1c6e854eba0e52f947c290)
Abstract:
Effects of microwave and conventional cooking methods were studied on total phenolics and antioxidant activity of pepper, squash, green beans, peas, leek, broccoli and spinach. Total phenolics content of fresh vegetables ranged from 183.2 to 1344.7 mg/100 g (as gallic acid equivalent) on dry weight basis. Total antioxidant activity ranged from 12.2% to 78.2%. With the exception of spinach, cooking affected total phenolics content significantly ($p < 0.05$). The effect of various cooking methods on total phenolics was significant ($p < 0.05$) only for pepper, peas and broccoli. After cooking, total antioxidant activity increased or remained unchanged depending on the type of vegetable but not type of cooking.
Keywords: Green vegetables; Phenolics; Antioxidant activity; DPPH

Patricia Y. Niizu, Delia B. Rodriguez-Amaya, New data on the carotenoid composition of raw salad vegetables, Journal of Food Composition and Analysis, Volume 18, Issue 8, December 2005, Pages 739-749, ISSN 0889-1575, DOI: 10.1016/j.jfca.2004.09.001.
(http://www.sciencedirect.com/science/article/B6WJH-4FFX96B-5/2/0776bccaebcf8ae6f97debc5339d5163)
Abstract:
This study was carried out to determine the concentrations of the principal carotenoids of eight vegetables (Nantes carrot, chicory, Boston and curly lettuce, green bell pepper, rucula, Carmen tomato and cress), which are the most consumed in raw salad by the Brazilian population. The samples were purchased from three major supermarkets in the city of Sao Paulo. For each vegetable, six composite samples collected at different times during the year were analyzed individually. The green vegetables had lutein (7.7-56.1 [mu]g/g), [beta]-carotene (2.7-35.3 [mu]g/g), violaxanthin (4.6-31.7 [mu]g/g) and neoxanthin (3.1-20.5 [mu]g/g) as principal

carotenoids. Boston and curly lettuce also contained lactucaxanthin (7.5 and 6.7 [mu]g/g, respectively). Carrot had [alpha]-carotene (35.0 [mu]g/g) and [beta]-carotene (61.5 [mu]g/g) as principal carotenoids and lutein (5.1 [mu]g/g) as minor component. Tomato, a rich source of lycopene (35.4 [mu]g/g), also contained lutein (1.0 [mu]g/g) and [beta]-carotene (3.2 [mu]g/g) in much smaller amounts.
Keywords: Carotenoids; Leafy vegetables; Bell pepper; Carrot; Tomato

Molly Damon, Nancy Z. Zhang, David B. Haytowitz, Sarah L. Booth, Phylloquinone (vitamin K1) content of vegetables, Journal of Food Composition and Analysis, Volume 18, Issue 8, December 2005, Pages 751-758, ISSN 0889-1575, DOI: 10.1016/j.jfca.2004.07.004.
(http://www.sciencedirect.com/science/article/B6WJH-4FFX96B-4/2/b28e18782dd4facf2a615196ba956415)
Abstract:
Assessment of vitamin K (VK) dietary intakes has been limited by incomplete VK food composition data for the US food supply. The phylloquinone (VK-1 or vitamin K1) concentrations of a variety of geographically representative vegetables (n=218) were determined by reversed-phase high performance liquid chromatography with fluorescent detection. Green leafy and flower vegetables including broccoli, broccoli raab, spinach, and certain lettuces, contained >100 [mu]g phylloquinone/100 g vegetable. In contrast, raw tubers and roots contained <10 [mu]g phylloquinone/100 g vegetable. Iceberg lettuce, a primary dietary source of phylloquinone, contained 24.1 [mu]g phylloquinone/100 g vegetable, which is less than previously listed in nutrient databases. Potential factors affecting phylloquinone concentrations include processing and varietal type of leafy vegetables.
Keywords: Phylloquinone; Vegetables; HPLC; Vitamin K

Nicole Darmon, Michel Darmon, Matthieu Maillot, Adam Drewnowski, A Nutrient Density Standard for Vegetables and Fruits: Nutrients per Calorie and Nutrients per Unit Cost, Journal of the American Dietetic Association, Volume 105, Issue 12, December 2005, Pages 1881-1887, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.09.005.
(http://www.sciencedirect.com/science/article/B758G-4HP5YFV-D/2/c86659719922a2736490366333062119)
Abstract: Objectives
The Dietary Guidelines for Americans 2005 recommended that consumers give priority to nutrient-dense foods, those that contain substantial amounts of key nutrients in relation to the dietary energy they provide. This study developed a scoring system to estimate the nutritional adequacy of vegetables and fruits, on a per weight, per calorie, and per unit cost basis.Data
We used a French national food composition database for 637 foods, including 129 vegetables and fruits. Mean national retail prices were obtained for each food.Methods
The nutrient adequacy score was defined as the mean of percent daily values for 16 nutrients, based on 100 g of food. The nutrient density score and the nutrient-to-price ratio were the mean of percent daily values for 16 nutrients, expressed per 100 kcal and per 1 euro of food, respectively. Relationships between energy density of vegetables and fruits, nutrient adequacy score, nutrient density score, and nutrient-to-price ratio were tested using linear regression.Results
Energy density and nutrient density score were negatively correlated, confirming the widely accepted notion that energy-dense foods tend to be nutrient-poor. As expected, fruits and vegetables had the highest nutrient density score because they were nutrient-rich in relation to their low energy content. They also had a relatively high nutrient-to-price ratio, showing that they provided nutrients at a reasonable cost when compared with other foods.Conclusions
Foods ranked differently when nutritional adequacy was calculated per weight (nutrient adequacy score), per calorie (nutrient density score), or per unit cost (nutrient-to-price ratio). The present

results showed that although fruits and vegetables are an expensive source of dietary energy, they provide key nutrients at a reasonable cost.

F.R. Harker, C. Norquay, R. Amos, R. Jackman, A. Gunson, M. Williams, The use and misuse of discrimination tests for assessing the sensory properties of fruit and vegetables, Postharvest Biology and Technology, Volume 38, Issue 3, December 2005, Pages 195-201, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2005.06.007.
(http://www.sciencedirect.com/science/article/B6TBJ-4HD8B7T-2/2/d96d0b46a97f6852178c29521c4b0699)
Abstract:
Postharvest biologists and technologists often need to include a human dimension to the assessment of product quality. The simplest of the questions that can be asked about two treatments is whether or not the sensory properties are different. There are a number of different types of discrimination tests that can be used to answer this question. Among such tests the triangle test is often considered by researchers, but is invalid because of the heterogeneity found in biological products, such as fruit and vegetables. In the current study, the problems associated with triangle tests are demonstrated by manipulating flavor and texture in apple juice, and an alternative discrimination test, the R-index, is examined in a study comparing apricots and peaches with low, medium and high soluble solids content (SSC). Following the completion of the R-index test on apricots and peaches, the participants indicated their preference for two fruit from each SSC-treatment using a 150 mm line scale anchored `dislike extremely' to `like extremely'. Participants expressed significantly higher ($p < 0.05$) liking for high sugar (14-15% SSC) over low sugar (9-10% SSC) apricots and peaches. However, discrimination tests using the R-index did not identify any significant difference between the treatments. The results indicate that discrimination tests (both triangle and R-index) are cognitively challenging for participants, and that biological variability associated with fruit and vegetables will often overwhelm attempts to identify statistically significant differences.
Keywords: Triangle tests; R-index; Apricot; Peach

Andrea M. Piagentini, Julio C. Mendez, Daniel R. Guemes, Maria E. Pirovani, Modeling changes of sensory attributes for individual and mixed fresh-cut leafy vegetables, Postharvest Biology and Technology, Volume 38, Issue 3, December 2005, Pages 202-212, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2005.07.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4HD8B7T-1/2/682b2ca872a3616bb381a968abc9e9ae)
Abstract:
Changes of the main sensory attributes of three fresh-cut leafy vegetables (Iceberg and Romaine lettuce and chicory) were investigated at selected temperatures (2-20 [degree sign]C). The aim of this work was to develop and apply a kinetic approach to model sensory quality changes in order to establish the appropriate function that describes the time-temperature dependence of each attribute. The changes of the sensory characteristics followed first order reaction kinetics and the temperature dependence of rate constants followed the Arrhenius relationship. The limiting quality factor, which determined the sensory shelf life for the three fresh-cut vegetables assayed, at any temperature, was the general appearance of the products. The activation energies obtained for general appearance were 71.1 kJ mol-1 for fresh-cut Iceberg lettuce, 69.5 kJ mol-1 for fresh-cut Romaine lettuce and 65.7 kJ mol-1 for fresh-cut chicory. Additional experimental tests showed that the predicted and experimental sensory shelf life for individual fresh-cut vegetables at constant temperature were not different ($P > 0.05$). Under dynamic temperature conditions (sequence of different temperatures), the predicted and experimental values of browning, wilting, and off-odour were also not different ($P > 0.05$), but the general appearance loss model overestimated the quality loss from 10 to 30%. The models of quality change for individual vegetables were used to

predict the sensory shelf life of fresh-cut mixed vegetables. The experimental validation tests proved that these models provide a good approach to evaluate the shelf life of the mixed product. Results showed that the general appearance of fresh-cut Iceberg and Romaine lettuce dominated the sensory perception of mixed product.
Keywords: Sensory quality; Shelf life; Iceberg lettuce; Romaine lettuce; Chicory

K.P. Kumaraguru vasagam, S. Ramesh, T. Balasubramanian, Dietary value of different vegetable oil in black tiger shrimp Penaeus monodon in the presence and absence of soy lecithin supplementation: Effect on growth, nutrient digestibility and body composition, Aquaculture, Volume 250, Issues 1-2, 14 November 2005, Pages 317-327, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2005.02.035.
(http://www.sciencedirect.com/science/article/B6T4D-4FXNRCN-1/2/f851baa16666595a9786f736f9651f54)
Abstract:
Sunflower oil, peanut oil, palm oil and sardine oil were evaluated for their dietary value in juvenile Penaeus monodon in the presence or absence of soy lecithin (SL). Eight isonitrogenous and isocaloric diets were formulated to contain each of the oils as the lipid source. Evaluation was based on the growth performance of shrimp (for 42 days) and apparent digestibility coefficients (ADC). The ADC of the diets was determined by comparing concentrations of the digestibility marker, chromic oxide in the feed and faeces of the shrimp. Shrimps fed diets containing vegetable oil with SL had significantly higher values ($P < 0.05$) than those fed diets containing the same oil without SL in all the performance parameters tested. No significant differences ($P > 0.05$) were observed among SL supplemented dietary treatments, although weight gain and feed efficiency were higher in shrimp fed diets containing peanut oil (PNL) and sardine oil (FOL) respectively. Among the dietary treatments without SL, shrimp fed sardine oil diet (FO) had significantly ($P > 0.05$) higher values than other diets in all the performance parameters tested which did not differ from those fed SL supplemented diets. There was no significant difference ($P > 0.05$) in survival of shrimp among the dietary treatments. Though apparent dry matter digestibility (ADMD) was not significantly differed among dietary oils, there exists a significant difference in ADC for crude protein, crude lipid and energy. All SL supplemented diets showed a marked increase in apparent crude lipid digestibility (ACLD) than the diets without SL. A high correlation was found between dietary phospholipid (PL) level and ACLD ($r = 0.95$; $P < 0.05$) of the experimental diets. Carcass composition of shrimp fed the different vegetable oil sources was similar. However, the lipid content was higher in the shrimp fed diets containing FO and FOL. The fatty acid composition of the test diets was reflected to a certain extent in the fatty acid composition of whole shrimp. The findings of the present work have shown that, shrimp fed vegetable oil supplemented with SL had significantly higher growth and nutrient digestibility comparable to that of sardine oil without SL.
Keywords: Shrimp diets; Penaeus monodon; Vegetable oil; Soy lecithin; Digestibility; Fatty acids

M.S. Izquierdo, D. Montero, L. Robaina, M.J. Caballero, G. Rosenlund, R. Gines, Alterations in fillet fatty acid profile and flesh quality in gilthead seabream (Sparus aurata) fed vegetable oils for a long term period. Recovery of fatty acid profiles by fish oil feeding, Aquaculture, Volume 250, Issues 1-2, 14 November 2005, Pages 431-444, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2004.12.001.
(http://www.sciencedirect.com/science/article/B6T4D-4FY3NYT-1/2/7b50a130a6b1f5a27fe5f4cb1fef3f3c)
Abstract:
To determine the effect of long term feeding of diets with high levels of vegetable oils gilthead seabream juveniles were fed for 7 months with several diets containing vegetable oils at two inclusion levels. Anchovy oil was the only lipid source of FO (fish oil) diet, whereas in diets 60RO,

60LO and 60SO, 60% of fish oil was substituted by rapeseed (RO), linseed (LO) or soybean (SO) oils, respectively, and 80% was substituted by linseed or soybean oils in diets 80LO and 80SO. Afterwards, all fish were fed only a fish oil diet to determine the progressive evolution of fillet fatty acid profiles, since fish muscle fatty acid composition changes by feeding vegetable oils affecting its nutritional value for human health.
Results showed that substitution by vegetable oils of up to 60% fish oil in diets for gilthead seabream does not affect growth and feed utilization even after a long feeding period. However, 80% substitution of fish oil significantly reduced growth. Feeding vegetable oils reduced muscle contents of docosahexaenoic acid (DHA) and arachidonic acid (ARA) to a lower degree than their reduction in the diet, denoting their importance, reduction of eicosapentaenoic acid (EPA) in muscle being more pronounced. Moreover, re-feeding with a FO diet for 60 days effectively recovered muscle DHA and ARA contents, whereas those of EPA were not recovered even after 90 days. Linoleic acid was strongly retained even after 'wash out'. Fish fillets were very well accepted by the panel of judges. Dietary soybean oil inclusion produced significantly less shiny and less hard fillets, but more juicy and adhesive than FO fillets, with a slight earthy flavour when fish were fed 80SO diet. However linseed oil inclusion only increased shininess when fish were fed 80LO diet. A significantly higher chroma value was obtained for 80LO fish fillets, although it was not noticeable to the human eye.
Keywords: Fish oil; Vegetable oils; DHA; EPA; n-3 HUFA; Sparus aurata

Nehal Thakor, Ujjval Trivedi, K.C. Patel, Biosynthesis of medium chain length poly(3-hydroxyalkanoates) (mcl-PHAs) by Comamonas testosteroni during cultivation on vegetable oils, Bioresource Technology, Volume 96, Issue 17, November 2005, Pages 1843-1850, ISSN 0960-8524, DOI: 10.1016/j.biortech.2005.01.030.
(http://www.sciencedirect.com/science/article/B6V24-4FV9MF8-2/2/d7b0b13d1592c31ec31df0178b767837)
Abstract:
Comamonas testosteroni has been studied for its ability to synthesize and accumulate medium chain length poly(3-hydroxyalkanoates) (mcl-PHAs) during cultivation on vegetable oils available in the local market. Castor seed oil, coconut oil, mustard oil, cotton seed oil, groundnut oil, olive oil and sesame oil were supplemented in the mineral medium as a sole source of carbon for growth and PHAs accumulation. The composition of PHAs was analysed by a coupled gas chromatography/mass spectroscopy (GC/MS). PHAs contained C6 to C14 3-hydroxy acids, with a strong presence of 3-hydroxyoctanoate when coconut oil, mustard oil, cotton seed oil and groundnut oil were supplied. 3-Hydroxydecanoate was incorporated at higher concentrations when castor seed oil, olive oil and sesame oil were the substrates. Purified PHAs samples were characterized by Fourier Transform Infrared (FTIR) and 13C NMR analysis. During cultivation on various vegetable oils, C. testosteroni accumulated PHAs up to 78.5-87.5% of the cellular dry material (CDM). The efficiency of the culture to convert oil to PHAs ranged from 53.1% to 58.3% for different vegetable oils. Further more, the composition of the PHAs formed was not found to be substrate dependent as PHAs obtained from C. testosteroni during growth on variety of vegetable oils showed similar compositions; 3-hydroxyoctanoic acid and/or 3-hydroxydecanoic acid being always predominant. The polymerizing system of C. testosteroni showed higher preference for C8 and C10 monomers as longer and smaller monomers were incorporated less efficiently.
Keywords: Vegetable oils; Comamonas testosteroni; FTIR; NMR; mcl-PHAs

Martha L. Daviglus, Kiang Liu, Amber Pirzada, Lijing L. Yan, Daniel B. Garside, Renwei Wang, Linda Van Horn, Willard G. Manning, Larry M. Manheim, Alan R. Dyer, Philip Greenland, Jeremiah Stamler, Relationship of Fruit and Vegetable Consumption in Middle-Aged Men to Medicare Expenditures in Older Age: The Chicago Western Electric Study, Journal of the American Dietetic

Association, Volume 105, Issue 11, November 2005, Pages 1735-1744, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.08.008.
(http://www.sciencedirect.com/science/article/B758G-4HDNVH6-F/2/64ad21dd36f8542f910019585fc4b8f7)
Abstract: Background
High fruit and vegetable intake is associated with lower risk of hypertension, cardiovascular disease, and cancer. Little is known about the relationship of fruit and vegetable intake to health care expenditures.Objective
Examine whether fruit and vegetable intake among middle-aged adults is related to Medicare charges--total, cardiovascular disease, cancer-related--in older age.Design
Participants were grouped into one of three strata according to fruit and vegetable intake, determined from detailed dietary history (1958-1959): less than 14 cups per month, 14 to 42 cups per month, or more than 42 cups per month. Combined intake was classified as low, medium, or high. Medicare claims data (1984-2000) were used to estimate mean annual spending for eligible surviving participants (65 years and older) from the Chicago Western Electric Study: 1,063 men age 40 to 55 and without coronary heart disease, diabetes, and cancer at baseline (1957-1958). Cumulative charges before death (n=401) were also calculated.Results
Higher fruit and fruit plus vegetable intakes were associated with lower mean annual and cumulative Medicare charges (P values for trend .019 to .862). For example, with adjustment for baseline age, education, total energy intake, and multiple baseline risk factors, annual cardiovascular disease-related charges were $3,128 vs $4,223 for men with high vs low intake of fruit plus vegetables. Corresponding figures were $1,352 vs $1,640 for cancer-related charges and $10,024 vs $12,211 for total charges. Results were generally similar for vegetable intake.Conclusion
These findings, albeit mostly not statistically significant, suggest that for men high intake of fruits and fruits plus vegetables earlier in life has potential not only for better health status but also for lower health care costs in older age.

Jill Reedy, Pamela S. Haines, Marci Kramish Campbell, Differences in Fruit and Vegetable Intake among Categories of Dietary Supplement Users, Journal of the American Dietetic Association, Volume 105, Issue 11, November 2005, Pages 1749-1756, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.08.009.
(http://www.sciencedirect.com/science/article/B758G-4HDNVH6-H/2/a80e0a0005207c0f83999d3a097e1868)
Abstract: Background
People who choose to take dietary supplements are often classified as having a healthful lifestyle; however, it is probable that several health behavior patterns exist among users.Objective
Data from the North Carolina Strategies to Improve Diet, Exercise, and Screening study (N=727) were used to identify and describe five different categories of dietary supplement use and evaluate how these categories are associated with both quantity and quality of fruit and vegetable consumption.Design
Five nonoverlapping dietary supplement use categories were created and descriptive demographic statistics were compared. Least-squares means were calculated for knowledge and fruit and vegetable quality and quantity measures. Logistic regression was performed to calculate adjusted odds ratios to examine associations among the dietary supplement use categories and the fruit and vegetable measures, using nonusers as the reference category.Results
Demographic profiles and dietary intake varied among the dietary supplement categories. People reporting both a multivitamin/multimineral and a single supplement (Multi Plus category) and any nonvitamin/nonmineral products (Herbals category) were more likely to be consuming more vegetables and higher-quality fruits and vegetables than those not taking any dietary supplements (Nonusers category), whereas people taking multivitamins/multiminerals only (Multis category) had

patterns that were more consistently similar to those not taking any dietary supplements (Nonusers).Conclusions
Study participants exhibited dietary supplement use patterns that were associated with differences in fruit and vegetable consumption. Simply characterizing people as users and nonusers will not capture critical demographic and dietary differences and will likely further cloud investigations of diet-disease relationships.

Athena S. Hagler, Gregory J. Norman, Lindsey R. Radick, Karen J. Calfas, James F. Sallis, Comparability and Reliability of Paper- and Computer-Based Measures of Psychosocial Constructs for Adolescent Fruit and Vegetable and Dietary Fat Intake, Journal of the American Dietetic Association, Volume 105, Issue 11, November 2005, Pages 1758-1764, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.08.010.
(http://www.sciencedirect.com/science/article/B758G-4HDNVH6-K/2/ca79ebf48b5dedddafb0b53a97d79a51)
Abstract: Background
This study investigated the comparability and reliability of computer- and paper-based measures of psychosocial constructs related to fruit and vegetable and dietary fat intake among adolescents.Methods
An ethnically diverse sample of 76 adolescents was studied (mean age 13 years). Scales measured use of change strategies, self-efficacy, decisional balance, family influences, and peer influences separately for the two dietary outcomes.Results
Comparability analyses indicated that responses for each of the 12 diet-related scales were not significantly different between the computer- and paper-based surveys. Internal consistencies were generally high ([alpha] from .61 to .97) with slightly better reliability on the computer- vs paper-based surveys. Test-retest reliabilities were adequate to good for most multiple-item scales (interclass correlation coefficients from .43 to .85 and .48 to .90 for paper and computer formats, respectively).Conclusions
Computer- and paper-based measures of psychosocial constructs are appropriate and ready for use in either format for studies of dietary behaviors in young people.

Jaime S. Ruud, Nancy Betts, Karen Kritch, Susan Nitzke, Barbara Lohse, Linda Boeckner, Acceptability of Stage-Tailored Newsletters about Fruits and Vegetables by Young Adults, Journal of the American Dietetic Association, Volume 105, Issue 11, November 2005, Pages 1774-1778, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.08.011.
(http://www.sciencedirect.com/science/article/B758G-4HDNVH6-N/2/244cb692b261159c9ba54cfef07066f3)
Abstract:
The purpose of this study was to evaluate the acceptability of stage-tailored newsletters as a communication means for promoting fruit and vegetable intake by young adults. Qualitative interviews were conducted to gather young adults' likes and dislikes about stage-tailored newsletters on fruits and vegetables. A total of 246 interviews were completed by young adults between the ages of 18 and 24 years for focus group and/or in-depth interviews. Prototype newsletters containing stage-matched messages were designed to increase motivational readiness to increase fruit and vegetable intake based on the Transtheoretical Model. Transcripts were grouped by stage of change and examined to identify major themes or topics. Results showed that young adults in each of the three stages responded positively to the tailored newsletters. Subjects provided feedback on newsletter likes/dislikes, benefits/barriers to eating fruits and vegetables, and strategies for promoting change. This study provides an example of the incorporation of key concepts from the Transtheoretical Model in development of stage-tailored newsletters for young adults.

Marc A. Adams, Robin L. Pelletier, Michelle M. Zive, James F. Sallis, Salad Bars and Fruit and Vegetable Consumption in Elementary Schools: A Plate Waste Study, Journal of the American Dietetic Association, Volume 105, Issue 11, November 2005, Pages 1789-1792, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.08.013.
(http://www.sciencedirect.com/science/article/B758G-4HDNVH6-S/2/261b4530818507230e5299ca04650558)
Abstract:
The object of this study was to determine whether students attending schools with self-service salad bars consume a greater amount of fruits and vegetables compared with students using preportioned servings and to evaluate the relationship between number of items offered and fruit and vegetable consumption. Two hundred ninety-four students in first through fifth grade were randomly selected from two schools with salad bars and two with preportioned servings. Weights of fruit and vegetable items were measured pre- and postconsumption and interobserver agreement +/-1 g was >=95%. Presence of a salad bar was not associated with greater fruit and vegetable consumption. Fruit and vegetable consumption was positively related to the number of fruit and vegetable items offered at salad bars (P<.05), adjusting for sex and grade. Fruit and vegetable variety was associated with elementary school-age children's fruit and vegetable consumption when using salad bars.

T.R. Annunciado, T.H.D. Sydenstricker, S.C. Amico, Experimental investigation of various vegetable fibers as sorbent materials for oil spills, Marine Pollution Bulletin, Volume 50, Issue 11, November 2005, Pages 1340-1346, ISSN 0025-326X, DOI: 10.1016/j.marpolbul.2005.04.043.
(http://www.sciencedirect.com/science/article/B6V6N-4GBWJT8-7/2/3202a06b27a5b7b69676f590032f3be9)
Abstract:
Oil spills are a global concern due to their environmental and economical impact. Various commercial systems have been developed to control these spills, including the use of fibers as sorbents. This research investigates the use of various vegetable fibers, namely mixed leaves residues, mixed sawdust, sisal (Agave sisalana), coir fiber (Cocos nucifera), sponge-gourd (Luffa cylindrica) and silk-floss as sorbent materials of crude oil. Sorption tests with crude oil were conducted in deionized and marine water media, with and without agitation. Water uptake by the fibers was investigated by tests in dry conditions and distillation of the impregnated sorbent. The silk-floss fiber showed a very high degree of hydrophobicity and oil sorption capacity of approximately 85 g oil/g sorbent (in 24 hours). Specific gravity measurements and buoyancy tests were also used to evaluate the suitability of these fibers for the intended application.
Keywords: Oil spill; Sorbents; Vegetable fibers; Sorption experiments; Silk floss

Mari Miyamoto, Yasuyuki Seto, Dong Hai Hao, Tamaki Teshima, Yan Bo Sun, Toshihide Kabuki, Li Bing Yao, Hadjime Nakajima, Lactobacillus harbinensis sp. nov., consisted of strains isolated from traditional fermented vegetables `Suan cai' in Harbin, Northeastern China and Lactobacillus perolens DSM 12745, Systematic and Applied Microbiology, Volume 28, Issue 8, 15 October 2005, Pages 688-694, ISSN 0723-2020, DOI: 10.1016/j.syapm.2005.04.001.
(http://www.sciencedirect.com/science/article/B7GVX-4G4XBTT-4/2/fc158adec40ec4baf1b310ee9059e4fe)
Abstract:
Taxonomical analysis of two genetically distinguished Lactobacillus strains isolated from traditional Chinese fermented vegetables `Suan cai' was performed. They formed l-lactate from glucose, were facultatively heterofermentative, and had a DNA G+C content of 53-54 mol%. They fermented d- and l-arabinose. They produced lactate, ethanol and acetate from gluconate at a molar ratio of 1.1:0.4:0.7. Phylogenetic analysis of 16S rDNA revealed that the two strains were closely related to L. perolens. DNA-DNA hybridization analysis revealed that the two strains were

different from L. perolens type strain DSM 12744 and formed a separate cluster with L. perolens DSM 12745. G+C molar content of DNA of the former is 51%, whereas those of the latter strains were in the range of 53-54%. Based on the results, we propose that the new species be named L. harbinensis sp. nov. and that L. perolens DSM 12745 be reclassified as L. harbinensis DSM 12745. The type strain of L. harbinensis DSM 16991T (=AHU 1762T=SBT 10908T).
Keywords: Lactobacillus harbinensis sp. nov.; Lactic acid bacteria; Traditional Chinese fermented vegetables; Suan cai; Lactobacillus perolens DSM 12745; Spoiled soft drink; Systematics

Constantinos Ehaliotis, Georgios I. Zervakis, Panagiotis Karavitis, Residues and by-products of olive-oil mills for root-zone heating and plant nutrition in organic vegetable production, Scientia Horticulturae, Volume 106, Issue 3, 3 October 2005, Pages 293-308, ISSN 0304-4238, DOI: 10.1016/j.scienta.2005.04.006.
(http://www.sciencedirect.com/science/article/B6TC3-4G80NT0-4/2/473360f5a243783546484fc7b1906412)
Abstract:
Residues and by-products of the olive-mill agro-industry (leaves and pomace) provided rhizosphere heating for cucumber plants during their prolonged in situ composting process carried out under the plant rooting systems. The plants were cultivated following organic production standards in the greenhouse, throughout the early spring production period. The composting of the above materials below the root-zone, resulted in an increase in the rhizosphere temperature by 10-15 [degree sign]C, resulting in an optimal 20-30 [degree sign]C ambient root-zone temperature during the whole cultivation period. No phytotoxicity was observed on any of the four different cucumber cultivars that were tested. The mature compost (MC) derived from the above materials was also assessed as a soil amendment for providing nutrients in organic greenhouse production of cucumber, in comparison to the application of other organic substrates available at low cost in Mediterranean regions. All organic substrate applications including MC increased soil organic matter content, as well as P and K availability. Sheep manure application nearly doubled cucumber production compared to the control (non-amended soil), whereas plain seaweed application reduced it by 40%. Spent mushroom (Pleurotus ostreatus) cultivation substrate and MC amendments showed no significant effect on cucumber production. High MC application rates, however, in a more fertile soil, resulted in yields comparable to sheep manure treatment. It is concluded that residues and by-products of olive-mills may provide effective root-zone heating at greenhouse production scale via an on-going composting process set below the plant root-zone, but only high application rates of mature composts derived from the above materials could satisfy nutrient demands during plant growth.
Keywords: Rhizosphere heating; Cucumber; Compost; Olive-mill residues; Organic farming

S. Dogliotti, M.K. van Ittersum, W.A.H. Rossing, A method for exploring sustainable development options at farm scale: a case study for vegetable farms in South Uruguay, Agricultural Systems, Volume 86, Issue 1, October 2005, Pages 29-51, ISSN 0308-521X, DOI: 10.1016/j.agsy.2004.08.002.
(http://www.sciencedirect.com/science/article/B6T3W-4DD8HHD-1/2/2bb25e09681b4a4fd83205d216948f9a)
Abstract:
The methodology presented in this paper aims at analysing whether there is room for improvement of vegetable farmers' income in Canelon Grande (Uruguay), while reducing soil erosion and improving physical and biological soil fertility, and to gain insight in the influence of farmers' resource availability on the opportunities for sustainable development. The (generic) approach we developed to support re-design of farming systems in this region is unique in dealing with complex temporal interactions in crop rotations and spatial heterogeneity on farms in one integrated method, while revealing trade-off between economic and environmental objectives. Rather than an

arbitrary sub-set, all feasible crop rotations were generated, using a tool named ROTAT. The crop rotations were combined with a range of production techniques according to pre-defined design criteria to create a wide variety of alternative production activities at the field scale. We used process-based simulation models supplemented with empirical data and expert knowledge to quantify inputs and outputs of production activities. We developed a mixed integer linear programming model (MILP), named Farm Images, to allocate production activities to a farm with land units differing in soil quality, while maximising or minimising socio-economic and environmental objectives, subject to constraints at the farm level. Production activities comprised current practices as well as activities new to the area. We used Farm Images to design farm systems for seven existing farms in Canelon Grande with different resource availability. The farm systems designed by the model had higher family income than current systems for six of the seven farms studied. The estimated average soil erosion per ha decreased by a factor of 2-4 in the farm systems proposed compared to the current systems, while the rate of change of soil organic matter increased from negative in the current systems to +130 to +280 kg ha-1 yr-1 in the proposed farm systems. The degree to which the objectives could be achieved was strongly affected by farm resource endowment, i.e., particularly by the fraction of the area irrigated, soil quality and labour availability per ha. The study suggests that decreasing the area of vegetable crops by introducing long crop rotations with pastures and green manure during the inter-crop periods and integrating beef cattle production into the farm systems would often be a better strategy than the actual farmers' practice.
Keywords: Sustainable development; Multiple goal linear programming; Farming systems; Modelling

Tim Pearson, Jean Russell, Michael J. Campbell, Margo E. Barker, Do `food deserts' influence fruit and vegetable consumption?--a cross-sectional study, Appetite, Volume 45, Issue 2, October 2005, Pages 195-197, ISSN 0195-6663, DOI: 10.1016/j.appet.2005.04.003.
(http://www.sciencedirect.com/science/article/B6WB2-4G94HGP-2/2/16b87dbadae9855305f31108d5d54180)
Abstract:
Lack of access to affordable healthy foods has been suggested to be a contributory factor to poor diet. This study investigated associations between diet and access to supermarkets, transport, fruit and vegetable price and deprivation, in a region divergent in geography and socio-economic indices. A postal survey of 1000 addresses (response rate 42%) gathered information on family demographics, supermarket and shop use, car ownership, mobility and previous day's fruit and vegetable intake. Postcode information was used to derive road travel distance to nearest supermarket and deprivation index. Fruit and vegetable prices were assessed using a shopping basket survey. Generalised linear regression models were used to ascertain predictors of fruit and vegetable intake. Male grocery shoppers ate less fruit than female grocery shoppers. Consumption of vegetables increased slightly with age. Deprivation, supermarket fruit and vegetable price, distance to nearest supermarket and potential difficulties with grocery shopping were not significantly associated with either fruit or vegetable consumption. These data suggest that the three key elements of a food desert, fruit and vegetable price, socio-economic deprivation and a lack of locally available supermarkets, were not factors influencing fruit or vegetable intake. We suggest that food policies aimed at improving diet should be orientated towards changing socio-cultural attitudes towards food.
Keywords: Food deserts; Food poverty; Food access; Fruit and vegetable consumption; Diet

Katherine M. Phillips, Kelli M. Wunderlich, Joanne M. Holden, Jacob Exler, Susan E. Gebhardt, David B. Haytowitz, Gary R. Beecher, Robert F. Doherty, Stability of 5-methyltetrahydrofolate in frozen fresh fruits and vegetables, Food Chemistry, Volume 92, Issue 4, October 2005, Pages 587-595, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.08.007.

(http://www.sciencedirect.com/science/article/B6T6R-4DDXRSS-5/2/8c4023266f9b82400ba16fb303fecc32)
Abstract:
The stability of 5-methyltetrahydrofolate (5MTHF) in homogenized fresh fruits and vegetables representing samples for the USDA National Food and Nutrient Analysis Program was evaluated. Samples were homogenized in liquid nitrogen and 5MTHF was measured after 0, 2, 7, 30 days and then at 3-month intervals for a total of 12 months storage at -60 +/- 5 [degree sign]C, utilizing extraction by a tri-enzyme treatment, purification by strong anion-exchange solid-phase extraction, and quantification by reverse-phase HPLC. Method validation included analysis of a reference material and interlaboratory analysis of selected samples by HPLC and LC-MS. A canned spinach composite was assayed in each analytical batch to monitor inter-assay precision.
No change in 5MTHF content was detected in any of the samples after 12 months. Concentrations ranged from <10 [mu]g/100 g in bananas to >100[mu]g/100 g in spinach. Relative standard deviations were generally <7% within assay and <11% between assays.
Keywords: Folate; 5-Methyltetrahydrofolate; High-performance liquid chromatography; Pteroylglutamic acid; Fruit; Vegetables; Food composition; Stability; Sample preparation; Spinach; Broccoli; Strawberries; Bananas; Potatoes; Apples; Oranges

Robert Aman, Jan Biehl, Reinhold Carle, Jurgen Conrad, Uwe Beifuss, Andreas Schieber, Application of HPLC coupled with DAD, APcI-MS and NMR to the analysis of lutein and zeaxanthin stereoisomers in thermally processed vegetables, Food Chemistry, Volume 92, Issue 4, October 2005, Pages 753-763, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.10.031.
(http://www.sciencedirect.com/science/article/B6T6R-4F02M1T-3/2/937e1fdca82755807c05669851090f7e)
Abstract:
A method for the simultaneous determination of lutein and zeaxanthin stereoisomers by HPLC-DAD was developed. For this purpose, (Z)-isomers of lutein and zeaxanthin were prepared by iodine-catalyzed photoisomerization and their structures elucidated by 1D- and 2D-LC-NMR spectroscopy, by APcI-MS in the positive mode, and by UV/Vis spectroscopy. Near baseline separation was achieved for (13-Z)-lutein, (13'-Z)-lutein, (all-E)-lutein, (9-Z)-lutein, (9'-Z)-lutein, (13-Z)-zeaxanthin, (all-E)-zeaxanthin, and (9-Z)-zeaxanthin. The influence of selected thermal treatments on degradation and isomerization of lutein and zeaxanthin was assessed. Sweet corn and spinach were sterilized (Tmax = 121 [degree sign]C, F = 5) and blanched (t = 2 min, steam), respectively. Heating resulted in decreases in total lutein content in sweet corn by 26% and in spinach by 17%. Total zeaxanthin content in sweet corn decreased by 29%. The amount of (Z)-isomers of lutein and zeaxanthin increased in sweet corn from 12% to 30% and 7% to 25%, respectively, whereas in fresh spinach a decrease in lutein (Z)-stereoisomers from 21% to 14% was observed.
Keywords: Lutein; Zeaxanthin; Stereoisomers; Identification; Sweet corn; Spinach; Sterilization; Blanching

E. Gleeson, D. O'Beirne, Effects of process severity on survival and growth of Escherichia coli and Listeria innocua on minimally processed vegetables, Food Control, Volume 16, Issue 8, 7th Karlsruhe Nutrition Congress on Food Safety, October 2005, Pages 677-685, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2004.06.004.
(http://www.sciencedirect.com/science/article/B6T6S-4D1R2HT-3/2/5cd6f4378196f9edef24cba921b34ded)
Abstract:
The effects of different slicing methods on subsequent growth and survival of Escherichia coli, Listeria innocua, and background microflora, during storage (8 [degree sign]C) on modified atmosphere packaged vegetables (sliced carrots, sliced iceberg and butterhead lettuce) were

evaluated. E. coli and L. innocua were used as models for E. coli O157:H7 and Listeria monocytogenes. Gas atmospheres within packages of minimally processed vegetables (MPV) were monitored to identify any effects of slicing treatments on oxygen and carbon dioxide levels. In general, the slicing method had no significant effect on initial inoculation levels. L. innocua grew better and E. coli survived better on vegetables sliced with blades that caused the most damage to cut surfaces. Slicing manually with a blunt knife or with machine blades gave consistently higher E. coli and L. innocua counts during storage than slicing manually with a razor blade. The effects of hand tearing were similar to slicing with a razor blade. The slicing method also affected the growth of the total background microflora; razor sliced vegetables tended to have lower counts than other treatments. Results also indicated that product respiration was affected by slicing method.
Keywords: E. coli; Listeria; Minimally processed vegetables

G.A. Francis, D. O'Beirne, Variation among strains of Listeria monocytogenes: differences in survival on packaged vegetables and in response to heat and acid conditions, Food Control, Volume 16, Issue 8, 7th Karlsruhe Nutrition Congress on Food Safety, October 2005, Pages 687-694, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2004.06.005.
(http://www.sciencedirect.com/science/article/B6T6S-4D1R2HT-5/2/f118c0ab28d39418e705271699613d87)
Abstract:
The survival of different serotypes and strains of Listeria monocytogenes during storage on packaged vegetables (lettuce, dry coleslaw mix) was examined and their resistance to acid (pH 3.5), heat (55 [degree sign]C) and antibiotics investigated. Survival and growth patterns on vegetables depended on strain, product type and package atmosphere. In general, most of the strains examined grew well on shredded lettuce, with populations increasing during storage. In the case of coleslaw mix, there were significant differences ($P < 0.05$) in survival of the various strains; populations of most strains decreased during storage but to different extents. However, populations of serotype 1/2a strain 269 increased ($P < 0.05$) on coleslaw. There was significant variation ($P < 0.05$) among strains in their resistance to heat and acid conditions; however, all strains responded similarly to antibiotics. In conclusion, there were significant differences observed among the various strains in terms of their ability to survive in heat and acidic conditions and on packaged vegetables.
Keywords: Foodborne pathogens; Food safety; Fresh produce

A. Sass-Kiss, J. Kiss, P. Milotay, M.M. Kerek, M. Toth-Markus, Differences in anthocyanin and carotenoid content of fruits and vegetables, Food Research International, Volume 38, Issues 8-9, Third International Congress on Pigments in Food, October-November 2005, Pages 1023-1029, ISSN 0963-9969, DOI: 10.1016/j.foodres.2005.03.014.
(http://www.sciencedirect.com/science/article/B6T6V-4GHSGGH-3/2/173bafc8dce0ad34d1a6412e82fae465)
Abstract:
Two compounds important in giving the colour of fruits and vegetables were studied in different species. Anthocyanin and carotenoids were analysed in several varieties of sour cherry, tomato and apricot by HPLC methods. From the three species studied pigment composition of apricots was most variable between varieties while in other species primarily the content of pigments changed. In sour cherry three varieties contained anthocyanins in extremely high concentrations (Zafir, Csengodi and Meteor cultivars). In tomatoes, lower concentration of lycopene was determined in table varieties grown in green house than processing varieties grown on open field. In apricots, Royal, Cegledi orias and Gonci Magyar were the richest varieties in carotenoid content. The weather of years has a dominant role in formation of colorants of plant species. There is evidence that difference in the weather between years was an important factor affecting anthocyanin and carotenoid composition and content.

Keywords: Anthocyanins; Carotenoids; Lycopene; [beta]-Carotene; Sour cherry; Tomato; Apricot

Juliana M.L.N. de Moura, Lireny A.G. Goncalves, Jose Carlos Cunha Petrus, Luiz Antonio Viotto, Degumming of vegetable oil by microporous membrane, Journal of Food Engineering, Volume 70, Issue 4, October 2005, Pages 473-478, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.08.042.
(http://www.sciencedirect.com/science/article/B6T8J-4G1WXX7-1/2/657196b4d777dc0fa8e12bce084fb615)
Abstract:
Degumming of soybean oil was studied in this work using ultrafiltration membrane prepared from polyethersulphone (PES). Crude desolventized oils were used as well as oil/hexane miscella in a 1:3 proportion. Besides the phospholipids content in the crude and ultrafiltered oil, other parameters such as viscosity, color, free fatty acids (FFAs) and tocopherols content were also analyzed. As expected, the desolventized oil presented a lower permeate flux due to its greater viscosity compared to the oil/hexane miscella. The removal of up to 89% of phospholipids was reached when the miscella was ultrafiltered. Significant changes were observed in any of the studied parameters such as color and FFAs. The scanning electron microscopy (SEM) has been used to analyze the PES membrane, before and after contact with hexane for 72 h at 50 [degree sign]C. No morphological and functional modifications were observed. The process has shown itself as an alternative to the conventional degumming process used nowadays.
Keywords: Ultrafiltration; Non-aqueous separations; Soybean oil; Phospholipids

Li Ni, Daniel Lin, Diane M. Barrett, Pectin methylesterase catalyzed firming effects on low temperature blanched vegetables, Journal of Food Engineering, Volume 70, Issue 4, October 2005, Pages 546-556, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.10.009.
(http://www.sciencedirect.com/science/article/B6T8J-4F29HSR-1/2/095e5be07cbf764d4d10495f38c70281)
Abstract:
The effect of low temperature blanching on firmness of eight vegetables was studied. Preheating vegetables at low temperatures prior to a conventional blanch resulted in firmer products. Temperature and time had significant effects on texture, with temperature the most influential. Under optimal conditions, firmness improvements in preheated vegetables as compared to blanched controls were: Bok choy--3.0 x (65 [degree sign]C, 45 min); Chinese cabbage--1.8 x (55 [degree sign]C, 45 min); cabbage--1.6 x (65 [degree sign]C, 15 min); green bell peppers--1.36 x (70 [degree sign]C, 15 min); sugar snap peas--1.7 x (65 [degree sign]C, 30 min); carrots--2.1 x (60 [degree sign]C, 15 min) and broccoli--2.9 x (60 [degree sign]C, 15 min). Thermal stability and optimal temperature for pectin methylesterase in homogenates from these vegetables were also analyzed. The relationship between optimum preheating conditions for textural integrity and pectin methylesterase activity is discussed.
Keywords: Blanching, Texture; Pectin methylesterase; Bok choy; Cabbage; Bell peppers; Sugar snap peas; Broccoli; Carrot

Kabwit Nguz, John Shindano, Simbarashe Samapundo, Andre Huyghebaert, Microbiological evaluation of fresh-cut organic vegetables produced in Zambia, Food Control, Volume 16, Issue 7, September 2005, Pages 623-628, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2004.07.001.
(http://www.sciencedirect.com/science/article/B6T6S-4F01196-1/2/84d2ea5a09c74feb19f2a41e1fe3e65d)
Abstract:
This study was undertaken to assess the microbiological quality of fresh-cut organic vegetables produced in Zambia. Fresh-cut organic mixed vegetables and green beans produced in Zambia were analysed for aerobic plate counts, coliforms, Enterobacteriaceae, Escherichia coli, Bacillus cereus, Clostridium perfringens, Listeria monocytogenes, Salmonella spp., Staphylococcus

aureus, and yeast and mould counts. The study included 160 samples for most of the parameters. The vegetables were grown on farms meant primarily for the export market. The vegetables were treated/washed with 150 [mu]g ml-1 chlorine solution at the processing plant prior to sampling. The aerobic plate count ranged between 3 log10 and 9.7 log10 CFU/g, with the highest count recorded for green beans. The largest grouping (26.1%) of vegetable samples fell between 3 and 4 log10 CFU/g. Coliform counts were between 1.0 log10 and 7.7 log10 CFU/g. The highest incidence level was 31.4% for total coliform counts between 3 log10 and 4 log10 CFU/g. E. coli was only detected on mixed vegetables in the range of 0.6 log10 to 3 log10 CFU/g, while Enterobacteriaceae counts ranged between 1.6 log10 and 9.8 log10 CFU/g with the highest counts being found on green beans. The highest incidence level was of 25.8% for counts within the same range as the aerobic plate counts. Yeast and mould counts showed the highest incidence level between 5 log10 and 6 log10 CFU/g with an overall range between 1.5 log10 and 5.6 log10 CFU/g. L. monocytogenes, Salmonella spp. and S. aureus were detected in 20%, 23.1% and 83.9% of samples, respectively . C. perfringens and B. cereus were not detected in any of the samples analysed.
Keywords: Microbiological quality; Minimally processed; Organic; Fresh-cuts vegetables

V.M. Gomez-Lopez, F. Devlieghere, V. Bonduelle, J. Debevere, Intense light pulses decontamination of minimally processed vegetables and their shelf-life, International Journal of Food Microbiology, Volume 103, Issue 1, 15 August 2005, Pages 79-89, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2004.11.028.
(http://www.sciencedirect.com/science/article/B6T7K-4FHJGD8-B/2/1211dccd159ab8b73c1c6d876f6605d1)
Abstract:
Intense light pulses (ILP) is a new method intended for decontamination of food surfaces by killing microorganisms using short time high frequency pulses of an intense broad spectrum, rich in UV-C light. This work studied in a first step the effect of food components on the killing efficiency of ILP. In a second step, the decontamination of eight minimally processed (MP) vegetables by ILP was evaluated, and thirdly, the effect of this treatment on the shelf-life of MP cabbage and lettuce stored at 7 [degree sign]C in equilibrium modified atmosphere packages was assessed by monitoring headspace gas concentrations, microbial populations and sensory attributes. Proteins and oil decreased the decontamination effect of ILP, whilst carbohydrates and water showed variable results depending on the microorganism. For this reason, high protein and fat containing food products have little potential to be efficiently treated by ILP. Vegetables, on the other hand, do not contain high concentrations of both compounds and could therefore be suitable for ILP treatment. For the eight tested MP vegetables, log reductions up to 2.04 were achieved on aerobic mesophilic counts. For the shelf-life studies, respiration rates at 3% O2 and 7 [degree sign]C were 14.63, 17.89, 9.17 and 16.83 ml O2/h kg produce for control and treated cabbage, and control and treated lettuce respectively; used packaging configurations prevented anoxic conditions during the storage times. Log reductions of 0.54 and 0.46 for aerobic psychrothrophic count (APC) were achieved after flashing MP cabbage and lettuce respectively. APC of treated cabbage became equal than that from control at day 2, and higher at day 7, when the tolerance limit (8 log) was reached and the panel detected the presence of unacceptable levels of off-odours. Control never reached 8 log in APC and were sensory acceptable until the end of the experiment (9 days). In MP lettuce, APC of controls reached rejectable levels at day 2, whilst that of treated samples did after 3 days. Both samples were sensory unacceptable at day 3, controls because of bad overall visual quality (OVQ), off-odour and leaf edge browning and treated samples due to bad OVQ; browning inhibitors might be proposed to preserve OVQ. Yeasts and lactic acid bacteria counts were low in all the samples. It seems that ILP treatment alone under the conditions used in this work does not increase MP vegetables shelf-life in spite of the reduction in the initial microbial load.
Keywords: Intense light pulses; Minimally processing; Fresh-cut vegetables; Decontamination; Shelf-life

Myungjin Kim, Jongsik Chun, Bacterial community structure in kimchi, a Korean fermented vegetable food, as revealed by 16S rRNA gene analysis, International Journal of Food Microbiology, Volume 103, Issue 1, 15 August 2005, Pages 91-96, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2004.11.030.
(http://www.sciencedirect.com/science/article/B6T7K-4FFX9CR-9/2/4ca0538a501ca3ef640bed9e082236e0)
Abstract:
Kimchi is a traditional Korean food fermented from a variety of vegetables. We elucidated the microbial community structure of five commercially produced kimchis made from Chinese cabbage by examining culture-independent 16S rRNA gene clone libraries. Most of the clones (347 out of 348) belonged to lactic acid bacteria and included several species of the genera Lactobacillus, Leuconostoc and Weissella. Weissella koreensis was found in all the samples and predominated in three of them (42.6-82%). Leuconostoc gelidum, Leuconostoc gasicomitatum and Lactobacillus sakei were common in the remaining kimchi clone libraries (>34%). The composition of bacterial phylotypes in kimchi varied between samples. Our approach revealed different community structures from those reported in previous culture-dependent studies based on phenotypic identification methods. The culture-independent method used here proved to be efficient and accurate and showed that the bacterial communities in kimchi differ from those in other fermented vegetable foods.
Keywords: Kimchi; 16S rRNA; Microflora; Lactic acid bacteria; ARDRA

E. Mulugeta, M. Geyer, Characterising the Washing Processes of Vegetables and Potatoes, Biosystems Engineering, Volume 91, Issue 4, August 2005, Pages 441-453, ISSN 1537-5110, DOI: 10.1016/j.biosystemseng.2005.05.009.
(http://www.sciencedirect.com/science/article/B6WXV-4GK1GMR-2/2/5a72196d37705a1ac2d3609804a3d531)
Abstract:
Experiments were conducted to investigate the interdependence between the different influencing factors on the spray washing process under low-pressure conditions. The washing effect as a function of standoff distance, spray pressure, and nozzle diameter is derived by considering the spray structure and the spray washing mechanism. Four measuring systems were used to determine the relevant spray structure parameters of different nozzles and their washing effects. Single droplets formed in the spray were submitted to an energetic assessment. The nozzles were evaluated with regard to their area washing performance [eta] as a ratio of the effective erosion area to spray area and effectiveness Es,Ve.
The agricultural nozzle for plant protection with a flow rate Q lower than 3 l min-1 at pressure p of 3 bar and a spray angle [alpha]h=0 of 90[degree sign] was found to be ineffective considering the determined area washing performance (area ratio [eta]=0[middle dot]10) as its spray parameters proved to be inappropriate concerning the droplet size spectrum, volume intensity per unit area, and mean impulse distribution. Conversely, the flat-fan nozzle with a flow rate Q of 6[middle dot]2 l min-1 at pressure p of 3 bar and a spray angle [alpha]h=0 of 90[degree sign] produces a spray with a satisfactory area washing performance (area ratio [eta]=0[middle dot]91), but a smaller area washing effectiveness Es,Ve for the spray conditions used in this experiment.

Ken Pernezny, Richard N. Raid, Nikol Havranek, Jairo Sanchez, Toxicity of mixed-oxidant electrolyzed oxidizing water to in vitro and leaf surface populations of vegetable bacterial pathogens and control of bacterial diseases in the greenhouse, Crop Protection, Volume 24, Issue 8, August 2005, Pages 748-755, ISSN 0261-2194, DOI: 10.1016/j.cropro.2004.12.011.
(http://www.sciencedirect.com/science/article/B6T5T-4FM5CSM-1/2/ee3304899af6038b4254dd14cb00ed22)

Abstract:
Mixed-oxidant (MO) electrolyzed oxidizing (EO) water was generated by electrolysis of a 1.7% KCl (aq. w/v) brine solution. The MO EO water was a powerful bactericide in vitro at a dosage of mixed oxidants equivalent to 50 mg L-1 free available chlorine. Populations of Xanthomonas campestris pv. vitians, Pseudomonas syringae pv. coriandricola, and Erwinia carotovora subsp. carotovora were reduced from log 9 to log 10 CFU mL-1 to undetectable levels after 1 min exposure. Only E. carotovora subsp. carotovora was sensitive to a 5 mg L-1 dose of MO EO water. In greenhouse disease control experiments, 50 or 100 mg L-1 MO EO water failed to control bacterial leaf spot of lettuce, bacterial spot of tomato and pepper, or bacterial leaf spot of radish. A spray application of a copper hydroxide/mancozeb suspension was effective for control of bacterial leaf spot of lettuce and bacterial spot of tomato and pepper, reducing foliar disease levels up to 45%. Some phytotoxicity was observed at the 100 mg L-1 MO EO water dose. The lack of disease control on greenhouse plants with MO EO water may in large part be due to low mortality of the pathogen on leaf surfaces. In five of six experiments, no significant reductions in leaf surface populations were found for 50 mg L-1 MO EO water. In contrast, copper/mancozeb treatments reduced pathogen leaf surface populations by up to 5 log units when copper-sensitive strains were involved.
Keywords: Electrolyzed oxidizing water; Xanthomonas; Pseudomonas; Erwinia; Lettuce; Tomato; Pepper

M. Khalique Ahmed, James K. Daun, Roman Przybylski, FT-IR based methodology for quantitation of total tocopherols, tocotrienols and plastochromanol-8 in vegetable oils, Journal of Food Composition and Analysis, Volume 18, Issue 5, August 2005, Pages 359-364, ISSN 0889-1575, DOI: 10.1016/j.jfca.2003.12.008.
(http://www.sciencedirect.com/science/article/B6WJH-4CRY5F2-2/2/97f3793d1b54b363a3f95e8ef53ba1ff)
Abstract:
Fingerprint infra-red spectra of oils from several samples of canola, flax, soybean and sunflower seeds were recorded. The tocopherols, tocotrienols and plastochromanol-8, cumulatively called chromanols, amounts were determined with high-pressure liquid chromatography (HPLC). The sum of tocopherols, tocotrienols and plastochromanol-8 amounts and the infra-red spectra were subjected to partial least-squares analysis. Excellent correlation was obtained between the calculated and experimental values. The developed methodology may provide an alternative method for rapidly scanning vegetable oils for vitamin E type molecules.
Keywords: Infra-red spectrum; Vegetable oils; Tocopherols; Tocotrienols; Plastochromanol-8; Chromanols; Partial least-squares analysis

A.L. Park, S.A. Nitzke, K.R. Kritsch, B.A. Lohse, K.K. Kattelmann, L.S. Boeckner, A.A. White, M.J. Oakland, S.L. Hoerr, Fruit and Vegetable Express: An Interactive, Stage-Tailored Web Program Designed to Increase Fruit and Vegetable Intake Among 18-24 Year Olds, Journal of the American Dietetic Association, Volume 105, Issue 8, Supplement 1, August 2005, Page 11, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.05.033.
(http://www.sciencedirect.com/science/article/B758G-4GPTPW0-H/2/4a5c080e7ab8b908ac7dfcf7eb1f7666)

V.J. Thompson, C.M. Bachman, K.W. Cullen, K. Watson, Changes in Fruit, Vegetable and Milk Consumption Among a Cohort of 5th Graders Are Related to Self-Efficacy and Norms, Journal of the American Dietetic Association, Volume 105, Issue 8, Supplement 1, August 2005, Page 24, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.05.079.
(http://www.sciencedirect.com/science/article/B758G-4GPTPW0-25/2/c727ef30e3c6bf795808af1d2df780a4)

A.J. Domas, S. Levinson, T. Sher, Not Necessarily Two Peas in a Pod: Fruit and Vegetable Intake of Cardiac Patients and Partners After a 12 Week Lifestyle Intervention Program and Follow-Up, Journal of the American Dietetic Association, Volume 105, Issue 8, Supplement 1, August 2005, Page 28, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.05.094.
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(http://www.sciencedirect.com/science/article/B758G-4GPTPW0-46/2/0d2d301db512dd443735e30e92bcec46)

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(http://www.sciencedirect.com/science/article/B758G-4GPTPW0-63/2/ad229dcb757092b9c91d283a10ab7a96)

J.M. Garcia, J.G. Fischer, M.A. Johnson, Fruit and Vegetable Intake Patterns and Barriers to Fruit and Vegetable Intake Among Participants of the Older Americans Act Nutrition Program, Journal of the American Dietetic Association, Volume 105, Issue 8, Supplement 1, August 2005, Page 69, ISSN 0002-8223, DOI: 10.1016/j.jada.2005.05.245.
(http://www.sciencedirect.com/science/article/B758G-4GPTPW0-7P/2/87f5c85aadb55cde016ca486796534ef)

Ganiyu Oboh, Effect of blanching on the antioxidant properties of some tropical green leafy vegetables, LWT - Food Science and Technology, Volume 38, Issue 5, August 2005, Pages 513-517, ISSN 0023-6438, DOI: 10.1016/j.lwt.2004.07.007.
(http://www.sciencedirect.com/science/article/B6WMV-4DB57C9-1/2/5cda2ed578b57420ae2c1fefce35ab01)
Abstract:
Eight popularly consumed green leafy vegetables in Nigeria namely: Structium sparejanophora, Amarantus cruentus, Telfairia occidentalis, Baselia alba, Solanum macrocarpon, Corchorus olitorus, Vernonia amygdalina, and Ocimum gratissimum were blanched in hot water for 5 mins. The antioxidant properties of the fresh and blanched green leafy vegetables were subsequently determined. The total phenol, ascorbic acid and the antioxidant potentials as typified by reducing property and free radical scavenging activity was also determined. The results of the study revealed that blanching cause a significant ($P<0.05$) increase in the total phenol [fresh (0.1-0.3 g/100 g), blanched (0.2-0.6 g/100 g)] content of the green leafy vegetables except in Amarantus cruentus and Vernonia amygdalina where there was no change. Conversely, there was a significant ($P<0.05$) decrease in the vitamin C [fresh (43.5-148.0 mg/100 g), blanched (15.8-27.3 mg/100 g)], reducing property [fresh (0.5-1.5 absorbance), blanched (0.1-0.6 absorbance)] and free radical scavenging ability [fresh (20.0-51.4%), blanched (16.4-47.1%)] of the blanched green leafy vegetables except in Structium sparejanophora, where there was no change in the reducing property (0.6 absorbance) and free radical scavenging ability (59.8%) of the blanched vegetable. In view of this it could be concluded that blanching of vegetables though makes green leafy vegetables more palatable and less toxic, however it reduces their antioxidant properties drastically.

Keywords: Phenol; Vitamin C; Reducing power; Free-radical scavenging; Vegetables

Federico Gomez Galindo, Pietro Rocculi, Lars Wadso, Ingegerd Sjoholm, The potential of isothermal calorimetry in monitoring and predicting quality changes during processing and storage of minimally processed fruits and vegetables, Trends in Food Science & Technology, Volume 16, Issue 8, August 2005, Pages 325-331, ISSN 0924-2244, DOI: 10.1016/j.tifs.2005.01.008.
(http://www.sciencedirect.com/science/article/B6VHY-4FTS2W9-3/2/d346bf07ce919c0ae89d4cb6c84cd307)
Abstract:
We review the potential of isothermal calorimetry as an analytical tool to provide an integrated view of the effect of different processing steps on the quality and shelf life of minimally processed fruits and vegetables. Variations in processing operations involved in product development in the food industry are studied through a factory scenario to show the versatility of the technique in monitoring and predicting changes in quality of minimally processed horticultural products.

D. Montero, L. Robaina, M.J. Caballero, R. Gines, M.S. Izquierdo, Growth, feed utilization and flesh quality of European sea bass (Dicentrarchus labrax) fed diets containing vegetable oils: A time-course study on the effect of a re-feeding period with a 100% fish oil diet, Aquaculture, Volume 248, Issues 1-4, Fish Nutrition and Feeding - Proceedings of the 11th International Symposium on Nutrition and Feeding in Fish organized by the Department of Fisheries, Thailand held in Phuket Island, Thailand, 2-7 May 2004., 29 July 2005, Pages 121-134, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2005.03.003.
(http://www.sciencedirect.com/science/article/B6T4D-4GNKR88-1/2/d421e9410bff87b46d0c08e8d7c7ae72)
Abstract:
In the present study 75 g European sea bass were fed for 8 months with different diets (22% dietary lipid content) containing vegetable oils at two inclusion levels. The control diet (Diet FO) contained anchovy oil as the only lipid source; in diets 60RO, 60LO, and 60SO of fish oil was substituted by rapeseed, linseed or soybean oils, respectively; finally, in diet 80LO, 80% of the fish oil was substituted by linseed oil. Fish were fed to apparent satiation three times a day. All fish were individually weighed once per month. Lipid and fatty acid composition of diets and fish fillets were determined at the beginning, middle and end of the experimental period. Once the commercial size was reached, all fish were fed a 100% FO containing diet during 150 days.
No significant differences were found in feed intake. Fish fed the diets containing 80% linseed oil or 60% rapeseed oil had significant ($P < 0.05$) lower growth. Flesh fatty acid composition of total lipids reflected the fatty acids in the diets. Flesh contents of n-3 HUFA were reduced to about 45% in fish fed diets 60RO, 60LO or 60SO and to about 50% in diet 80LO. This reduction was markedly higher for EPA than for DHA. High levels of oleic, linoleic and linolenic acids were found in fish fed RO, SO and LO respectively.
After 150 days of re-feeding period with a 100% fish oil diet, DHA levels were restored in those fish previously fed diets containing vegetable oils, but EPA levels remained lower when compared with fish fed 100% FO diet. Flesh content of linoleic and linolenic acids remained higher in those fish previously fed soybean and linseed oil containing diets, respectively.
Keywords: Vegetable oil; EFA; DHA; EPA; Sea bass

G. Mourente, J.R. Dick, J.G. Bell, D.R. Tocher, Effect of partial substitution of dietary fish oil by vegetable oils on desaturation and [beta]-oxidation of [1-14C]18:3n-3 (LNA) and [1-14C]20:5n-3 (EPA) in hepatocytes and enterocytes of European sea bass (Dicentrarchus labrax L.), Aquaculture, Volume 248, Issues 1-4, Fish Nutrition and Feeding - Proceedings of the 11th International Symposium on Nutrition and Feeding in Fish organized by the Department of

Fisheries, Thailand held in Phuket Island, Thailand, 2-7 May 2004., 29 July 2005, Pages 173-186, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2005.04.023.
(http://www.sciencedirect.com/science/article/B6T4D-4G6J87T-4/2/79c44540f1074faa46accd7533f8168c)
Abstract:
The increasing worldwide aquaculture output and concomitant decrease in the stocks of feed-grade fish used for fish oil production has made fish oil replacement in feeds a priority for the aquaculture industry. The regulation of fatty acid metabolism in fish is important in order to determine strategies for the best use of plant oils in diets for commercially important cultured fish species. We have studied the desaturation/elongation and [beta]-oxidation of 14C-linolenic (LNA) and 14C-eicosapentaenoic (EPA) acids in hepatocytes and pyloric caecal enterocytes in European sea bass fed diets with partial substitution (60%) of fish oil (FO) with vegetable oils (rapeseed, linseed and palm oil) blended in different proportions, for 64 weeks. The rate of desaturation of 14C-LNA was very low in hepatocytes from all treatments and no significant differences were observed among treatments. The rate of desaturation of 14C-LNA in enterocytes was higher than that in hepatocytes but still low (less than 5% of total radioactivity recovered). The desaturation of 14C-EPA in enterocytes was also higher than in hepatocytes, but again was low and no significant differences were found among treatments. The rates of [beta]-oxidation of 14C-LNA and 14C-EPA were much higher than the rates of desaturation in both hepatocytes and enterocytes; however, no significant differences were observed in either hepatocytes or enterocytes among treatments. The rates of [beta]-oxidation of 14C-LNA were considerably higher than those of 14C-EPA in both hepatocytes and enterocytes. In conclusion, European sea bass (a carnivorous marine fish) showed very low desaturation and elongation of LNA to EPA and DHA, and EPA to DHA, higher [beta]-oxidation of LNA than EPA, and all desaturation and oxidation activities were significantly higher in enterocytes than in hepatocytes. A second major conclusion is that no clear quantitative nutritional effects on the desaturation/elongation and [beta]-oxidation activities in either hepatocytes or enterocytes of sea bass were observed upon the inclusion of vegetable oils in the diet.
Keywords: European sea bass; Enterocytes; Hepatocytes; PUFA; Desaturation; [beta]-Oxidation; Rapeseed oil; Linseed oil; Palm oil; Fish oil

Farah M.G. Heraux, Steven G. Hallett, Stephen C. Weller, Combining Trichoderma virens-inoculated compost and a rye cover crop for weed control in transplanted vegetables, Biological Control, Volume 34, Issue 1, July 2005, Pages 21-26, ISSN 1049-9644, DOI: 10.1016/j.biocontrol.2005.04.003.
(http://www.sciencedirect.com/science/article/B6WBP-4G7DY6F-1/2/fa60b8c9993c364d4bd2393f4a027161)
Abstract:
A number of techniques exist that have potential to be integrated into low-external-input weed management systems but it is not the norm for these different techniques to be investigated in combination. Here, we evaluate the weed management potential of two cultural weed management techniques, cover cropping and fertility management, with two allelochemical-releasing organisms compared to herbicides. Trichoderma virens (=Gliocladium virens), which releases the herbicidal molecule viridiol, is applied incorporated in composted chicken manure (CCM), and rye, which is known to release the herbicidal molecules (3H)-benzoxazolinone (BOA) and 2,4-dihydroxy-1,4-(2H)benzoxazine-3-one (DIBOA), is used as the cover crop. Both T. virens-inoculated CCM and rye cover crops provided significant weed control in some experiments without a significant loss of crop vigor and yield. Yield was comparable to those obtained with chemical herbicides, although the results were not consistent. Clear weed suppressive activity exists with these nonherbicidal treatments, and effective weed management in transplanted

vegetables seems feasible with these approaches. However, further refinements in these treatments is needed to ensure reliable performance prior to grower acceptance.
Keywords: Bioherbicide; Viridiol; Trichoderma virens; Rye; Cover crop; Allelopathy; Integrated weed management

N.M. Sachindra, N.S. Mahendrakar, Process optimization for extraction of carotenoids from shrimp waste with vegetable oils, Bioresource Technology, Volume 96, Issue 10, July 2005, Pages 1195-1200, ISSN 0960-8524, DOI: 10.1016/j.biortech.2004.09.018.
(http://www.sciencedirect.com/science/article/B6V24-4DTBV1W-3/2/3526c5227afbe4c8a197025a7df76b07)
Abstract:
Shrimp waste is an important source of natural carotenoid. Studies were carried out to determine the extraction yield of shrimp waste carotenoids in different vegetable oils. Highest yield was obtained by extraction using refined sunflower oil compared to groundnut oil, gingelly oil, mustard oil, soy oil, coconut oil and rice bran oil. The extraction yield of carotenoids in sunflower oil was significantly influenced by level of oil to waste ($p < 0.05$), time ($p < 0.01$) and temperature ($p < 0.001$) of heating waste with oil before centrifugation to separate pigmented oil. A regression equation was derived for carotenoid yield as a function of time of heating, temperature of heating and oil level to waste. The optimized conditions for extraction of shrimp waste carotenoids in sunflower oil were determined to be oil level to waste of 2, temperature of 70 [degree sign]C and heating time of 150 min.
Keywords: Shrimp waste; Carotenoid; Oil extraction

Nader Soltani, Peter H. Sikkema, Darren E. Robinson, Vegetable crop responses to chlorimuron-ethyl applied in the previous year, Crop Protection, Volume 24, Issue 7, July 2005, Pages 685-688, ISSN 0261-2194, DOI: 10.1016/j.cropro.2004.12.006.
(http://www.sciencedirect.com/science/article/B6T5T-4FRTDCM-1/2/04fba27ea3b05a3d38fccea71a058162)
Abstract:
Two trials were established in 2001 and 2002 at Ridgetown, Ontario, to determine the effects of residues from chlorimuron-ethyl applied post-emergence (POST) to soybean on cabbage, potato, tomato, and sweet corn grown 1 year after application (i.e. 2002 and 2003). Treatments included an untreated control and chlorimuron-ethyl applied POST at 9 and 18 g ai ha-1, representing the label dose and twice the label dose in soybean compared with an untreated control. There were no visible injury symptoms at 7, 14, and 28 days after emergence (DAE) and no adverse effects on shoot dry weight and yield in any of the vegetable crops 1 year after chlorimuron-ethyl was applied. Cabbage, potato, tomato, and sweet corn showed excellent tolerance to POST applications of chlorimuron-ethyl applied to soybean in the previous year under the environmental conditions experienced in this study.
Keywords: Crop injury; Crop tolerance; Carryover; Chlorimuron-ethyl; Post-emergence

Ozlem Erdog[caron]rul, Hakan Sener, The contamination of various fruit and vegetable with Enterobius vermicularis, Ascaris eggs, Entamoeba histolyca cysts and Giardia cysts, Food Control, Volume 16, Issue 6, 5th International Meeting of the Noordwijk Food Safety and HACCP Forum, July 2005, Pages 557-560, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2004.06.016.
(http://www.sciencedirect.com/science/article/B6T6S-4D09G9W-1/2/4d1d013325e425e24af17423ec3a700f)
Abstract:
A total of 55 fruit and vegetable samples were collected in Kahramanmaras in order to assess their contamination level. The following fruit and vegetables were selected for this experiment: lettuce, parsley, cress, spinach and strawberry. The samples were collected in four different seasonal

periods. The strawberry samples were obtained from commercial sources in Kahramanmaras. In addition, four samples of water from canal that was used directly for the irrigation of crops and four soil samples were collected from four locations on two periods between 2002 fall and 2003 spring. Of the 10 Enterobius vermicularis positive samples were in lettuce, 12 in parsley, three in cress, four in spinach, 40 in strawberry, two in soil, one in irrigation water. Of the seven Ascaris eggs positive samples were in lettuce, four in parsley, two in spinach, and 20 in strawberry. Of the eight Entamoeba histolyca cysts positive samples were in lettuce, nine in parsley, and 12 in strawberry. Of the three Giardia cysts were found to be positive in lettuce, 18 in strawberry. In parsley, cress and spinach samples Giardia cysts were not found. In cress and spinach samples Entamoeba histolyca cysts and in cress samples Ascaris eggs were not observed. In 2002 spring and 2003 fall all of the parasite forms were detected in soil samples. As regards the irrigation water, in 2002 spring none of the form was detected but in 2003 fall all of the parasite forms were observed.
Keywords: Enterobius vermicularis; Ascaris eggs; Entamoeba histolyca cysts; Giardia cysts; Contamination; Vegetable; Fruit

Dorith Rotenberg, Leslie Cooperband, Alexandra Stone, Dynamic relationships between soil properties and foliar disease as affected by annual additions of organic amendment to a sandy-soil vegetable production system, Soil Biology and Biochemistry, Volume 37, Issue 7, July 2005, Pages 1343-1357, ISSN 0038-0717, DOI: 10.1016/j.soilbio.2004.12.006.
(http://www.sciencedirect.com/science/article/B6TC7-4FD12CT-1/2/2a654abdcacfe8213585db9a338bd36b)
Abstract:
Additions of organic amendments to agricultural soils can lead to improved soil quality and reduced severity of crop diseases. However, the relationship between disease severity and soil properties as affected by repeated additions of these amendments is poorly understood. The primary objectives of this study were to (i) resolve multivariate relationships between soil properties and foliar disease severity and (ii) identify soil properties that contribute to disease severity in an intensive irrigated vegetable production system receiving annual additions of fresh and composted paper mill residuals (PMR). Foliar diseases caused by Pseudomonas syringae pv. syringae on snap bean (bacterial brown spot) and P. s. pv. lachrymans on cucumber (angular leaf spot) are the focus of this report. The experiment consisted of a 3-year crop rotation of potato (1998 and 2001), snap bean (1999 and 2002), and cucumber (2000). Treatments included a non-amended fertilizer control and two rates of fresh PMR, PMR composted alone (PMRC), and PMR composted with bark (PMRB). Soil measures included total soil carbon (TC) and nitrogen (TN), particulate organic matter carbon (POMC) and nitrogen (POMN), volumetric soil moisture (VM) and in situ NO3-N. Multiple regression (MR) and principal component analyses (PCA) were conducted to identify key soil properties that influenced the amount of disease. On average, the amount of TC in plots amended with PMR composts increased 77-178% from 1999 to 2002 compared to the non-amended soils. In 1999, a year in which compost additions reduced the amount of bacterial brown spot of bean, TC explained 42% of the total variation in disease severity in the best MR model. Midseason TN alone was inversely related to angular leaf spot incidence in 2000, while POMN explained 51% of the variation in the best MR model for that year. In 2002, a year in which PMRC-amended soils exacerbated brown spot symptoms, midseason quantities of TN explained 80% of the variation in disease severity. Unique to 2002, NO3-N alone positively correlated with disease severity. Overall, the influence of soil carbon on disease severity was displaced by the increasing importance of TN and NO3-N, indicating a transition from a C-dependent to an N-dependent system.
Keywords: Paper mill residuals; Compost; Disease control; Soil organic matter; Aerial bacteria; Plant available nitrogen

Agnieszka Nawirska, Monika Kwasniewska, Dietary fibre fractions from fruit and vegetable processing waste, Food Chemistry, Volume 91, Issue 2, June 2005, Pages 221-225, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2003.10.005.
(http://www.sciencedirect.com/science/article/B6T6R-4DXC2WN-4/2/aa078d66b87205b772458e87a355e939)
Abstract:
Until recently, dietary fibre and its components were regarded as balast substances from vegetal food. These days, they are given increasing attention because of the beneficial physiological effects they may exert on human and animal organisms. Dietary fibre includes a number of components, and each of them displays specific properties. The components of major importance are cellulose, hemicellulose, lignin and pectins. The objective of this study was to determine the amounts of particular dietary fibre fractions in samples containing apple, black currant, chokeberry, pear, cherry and carrot pomace. The results revealed the following pattern: in each pomace sample, pectins occurred in the smallest amounts, and the content of lignin was very high (black currant and cherry pomace) or comparatively high (pear, chokeberry, apple and carrot pomace). The other dietary fibre components were difficult to form into clearly defined groups. Their proportions varied from one pomace type to another.
Keywords: Fruit and vegetable pomace; Non-starch polysaccharides

C. Cortes, M.J. Esteve, A. Fri'gola, F. Torregrosa, Quality characteristics of horchata (a Spanish vegetable beverage) treated with pulsed electric fields during shelf-life, Food Chemistry, Volume 91, Issue 2, June 2005, Pages 319-325, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.06.014.
(http://www.sciencedirect.com/science/article/B6T6R-4CYWMJ1-8/2/5bbfa7f30fd56574c47d06c928ff2ca3)
Abstract:
The application of pulsed electric fields (PEF) is one of the new non-thermal technologies being studied to evaluate their potential as alternative or complementary processes to thermal pasteurization. 'Horchata de chufa' (tiger nut milk or earth almond milk) is of high nutritional quality and therefore has great potential in the food market, limited by its very short shelf-life. The present work studies whether PEF can be used to obtain a quality horchata and increase its shelf-life while maintaining its organoleptic characteristics. In order to do so we determined pH, total fat, peroxide index, thiobarbituric acid-reactive substances index, formol index, and peroxidase activity in natural (untreated) horchata and horchata subjected to various PEF treatments and studied their stability during refrigerated storage (2-4 [degree sign]C). After PEF treatment, only peroxidase activity decreased significantly ($p < 0.05$). This parameter and pH varied during the shelf-life of the horchata, and a negative correlation was obtained between pH and peroxidase activity.
Keywords: Quality; Horchata; Pulsed electric fields

J. M. N. Marikkar, H. M. Ghazali, Y. B. Che Man, T. S. G. Peiris, O. M. Lai, Distinguishing lard from other animal fats in admixtures of some vegetable oils using liquid chromatographic data coupled with multivariate data analysis, Food Chemistry, Volume 91, Issue 1, June 2005, Pages 5-14, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.01.080.
(http://www.sciencedirect.com/science/article/B6T6R-4DM2BYK-1/2/fcd1061f369c8bc6309c1c36988a4cb3)
Abstract:
Detection of animal fat adulterants in vegetable oils is of great importance from commercial and health perspectives. Distinguishable identification of lard contamination in some vegetable oils has been attempted in this study. Vegetable oils, namely palm oil (PO), palm kernel oil (PKO), and canola oil (CLO), were spiked with different proportions of animal fats, such as lard (GLD), beef tallow (BT), and chicken fat (CF). High-performance liquid chromatographic (HPLC) analyses were performed to monitor the triacylglycerol (TAG) compositional changes in the oil samples before

and after adulteration. The results showed that qualitative determination of lard contamination in PKO was possible by a visual comparison of TAG profiles of PKO adulterated with different animal fats with those of the animal fats. This approach was not useful for PO and CLO. However, by subjecting liquid chromatographic data to multivariate procedures, distinguishable grouping of lard-contaminated samples was achieved for all three oils.
Keywords: Adulteration; Animal fat; High-performance liquid chromatography; Lard; Vegetable oils; Multivariate data analysis

Julio A. Berdegue, Fernando Balsevich, Luis Flores, Thomas Reardon, Central American supermarkets' private standards of quality and safety in procurement of fresh fruits and vegetables, Food Policy, Volume 30, Issue 3, Private Agri-food Standards: Implications for Food Policy and Agri-food Systems, June 2005, Pages 254-269, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2005.05.003.
(http://www.sciencedirect.com/science/article/B6VCB-4GPW3S4-1/2/b6ecff659d91a2ecdf6bab4ad6e40c37)
Abstract:
In the context of near-absence of public food safety and quality standards, or the lack of effective implementation of them where they exist, and in order to increase product quality and consistency and differentiate their product from traditional produce retailers, leading supermarket chains in Central America are imposing private standards on their fresh produce suppliers. These are mainly for cosmetic quality, but emerging also are standards for fresh produce safety, in particular for leafy greens and some fruit. They are implementing the private standards at the same time they are cutting costs in order to compete with wetmarkets, via organizational change in the leading chains' procurement systems (shifting away from use of spot markets and traditional wholesale systems toward centralized purchases and use of implicit contracts and specialized/dedicated wholesalers). They are coupling those changes with some actions to resolve idiosyncratic factor market failures facing farmers such as through provision of technical assistance. The implementation of these private standards of produce safety are good for consumers as they are among the few food safety practices by domestic food industry actors. But the tougher standards are a challenge for producers who need to make significant investments, implying the need for investment assistance and support services by governments. The paper presents field study findings for Costa Rica, Guatemala, El Salvador, Honduras, and Nicaragua from 2002 to 2004.
Keywords: Fresh produce; Supermarkets; Standards; Safety; Central America

Steve Jaffee, Oliver Masakure, Strategic use of private standards to enhance international competitiveness: Vegetable exports from Kenya and elsewhere, Food Policy, Volume 30, Issue 3, Private Agri-food Standards: Implications for Food Policy and Agri-food Systems, June 2005, Pages 316-333, ISSN 0306-9192, DOI: 10.1016/j.foodpol.2005.05.009.
(http://www.sciencedirect.com/science/article/B6VCB-4GHSGW5-1/2/e500525450aaa2234785d25afbf75fa1)
Abstract:
The paper examines how European retailers are using private standards for food safety and `quality' as risk management and competitive tools and the strategic responses of leading Kenyan and other developing country supplier/exporters to such standards. Despite measures to harmonize a `single market', the European fresh produce market is very diverse in terms of consumer preferences, structural dynamics and attention to and enforcement of food safety and other standards. Leading Kenyan fresh produce suppliers have re-positioned themselves at the high end, including `high care', segments of the market - precisely those that are most demanding in terms of quality assurance and food safety systems. An array of factors have influenced this strategic positioning, including relatively high international freight costs, the emergence of more effective competition in mainstream product lines, relatively low labor costs for produce

preparation, and strong market relationships with selected retail chains. To succeed in this demanding market segment, the industry has had to invest substantially in improved production and procurement systems, upgraded pack house facilities, and quality assurance/food safety management systems.
Keywords: Private standards; Food safety; Brand reputation; Supply chain restructuring

Abdellatif Hafidi, Daniel Pioch, Hamid Ajana, Membrane-based simultaneous degumming and deacidification of vegetable oils, Innovative Food Science & Emerging Technologies, Volume 6, Issue 2, June 2005, Pages 203-212, ISSN 1466-8564, DOI: 10.1016/j.ifset.2004.12.001.
(http://www.sciencedirect.com/science/article/B6W6D-4FNW4S7-1/2/1ded0cb5d50c7ed7eeb95d3f67414d2a)
Abstract:
An efficient membrane based process for simultaneous degumming and deacidification of vegetable oil was investigated. Appropriate crude oil conditioning allow the formation of submicronic aggregates, composed with soaps molecules resulting from the neutralisation of FFA and PL, which are retained when microfiltrating. Initial flux for the 0.8 [mu]m membranes (~560 l/h m2) was about twice that of the 0.5 [mu]m and about 10 times that of 0.2 [mu]m membrane. The filtered oils showed good quality in the case of 0.2 and 0.5 [mu]m membranes, but the use of 0.8 [mu]m membranes has allowed some soaps to pass through. Two types of crude oils behaviour were noticed. Oppositely to some oils for which just simple neutralisation led to a satisfactory elimination of the phospholipids, others were very tough to refine. The operating pression seems not to affect the efficiency of the separation, whereas the stability of the vesicle-like aggregates is found to be greatly affected by the increase of the temperature above 25 [degree sign]C. Beside the quasi-elimination of FFA, PL and water, minerals and pigments contents were also greatly lowered. When using an NaOH 20%, the lovibond yellow score lowered from around 28 to 10 in the case of sunflower oils and from ~34 to 6-20 in the case of soya and rapeseed oils. The monoglycerides were almost undetectable after membrane processing whatever the type of the conditioning used. After processing, the diglycerides contents, which ranges in the tested crude oils between 0.8% and 1.0%, showed almost no changes for two oils, whereas noticeable increases were obtained for the other oils. Total phytosterols contents were systematically reduced. The reductions vary from 3% to 44% upon the case. Neutralisation with an NaOH 20% lead to higher sterol losses in comparison to NaOH 40%. All the sterol components contents were found to be reduced in almost similar proportions.Industrial relevance
Conventional oil recovery and purification processes are continuously sought to be replaced by gentler processing conditions. Membrane based oil refining operating at low temperatures and without the generation of waste water offer an interesting and promising approach towards 'greener' technologies.
Keywords: Vegetable oils; Degumming; Deacidification; Microfiltration; Minor components; Quality

B.N. Shyamala, Sheetal Gupta, A. Jyothi Lakshmi, Jamuna Prakash, Leafy vegetable extracts--antioxidant activity and effect on storage stability of heated oils, Innovative Food Science & Emerging Technologies, Volume 6, Issue 2, June 2005, Pages 239-245, ISSN 1466-8564, DOI: 10.1016/j.ifset.2004.12.002.
(http://www.sciencedirect.com/science/article/B6W6D-4FR3NM9-1/2/0a18f8fa6fa9d9ff3b66873da2589e6b)
Abstract:
The investigation was undertaken with an objective of analyzing the antioxidant capacity of leafy vegetables (LV) and testing their efficacy on storage of heated oils. Four leafy vegetables viz., cabbage (Brassica oleracea var. capitata), coriander leaves (Coriandrum sativum), hongone (Alternanthera sessilis), and spinach (Spinacia oleracea) were analyzed for antioxidant activity by standard methods. The ethanol extracts of LV were added to refined sunflower and groundnut oils

heated to frying temperature and stored for 4 weeks, analyzed for peroxide value that indicates the oxidative state of oils. The polyphenol content ranged from 5 mg in cabbage to 69.5 mg in spinach. Reducing power of the leafy vegetables indicative of electron donating property for termination of free radical chain reactions followed the order--spinach<cabbage<coriander leaves<hongone leaves. LV exhibited good hydroxyl radical and DPPH scavenging activities. LV extracts conferred a protective effect on peroxide formation on storage of heated oils. LV are excellent antioxidants that are stable at high temperatures and can serve as substitutes for synthetic antioxidants.Industrial relevance
This paper presents an interesting approach using leafy vegetable extract with antioxidative properties to prevent oxidative damage during storage of heated oils. The temperature stability of antioxidants from leavy vegetables would allow to produce highly useful antioxidantive extracts from vegetable processing wastes.
Keywords: Leafy vegetables; Polyphenol; Reducing power; Free radical; Hydroxyl radical; Refined oils

L.B. Roseiro, D. Viala, J.M. Besle, A. Carnat, D. Fraisse, J.M. Chezal, J.L. Lamaison, Preliminary observations of flavonoid glycosides from the vegetable coagulant Cynara L. in protected designation of origin cheeses, International Dairy Journal, Volume 15, Issues 6-9, The Fourth IDF Symposium on Cheese: Ripening, Characterization and Technology, June-September 2005, Pages 579-584, ISSN 0958-6946, DOI: 10.1016/j.idairyj.2004.07.027.
(http://www.sciencedirect.com/science/article/B6T7C-4FTDK47-2/2/10eaa40725a2e091f4ee9d22a3f87a97)
Abstract:
Aqueous extracts of Cynara cardunculus L. (cardoon) flowers have been used for centuries as vegetable coagulants for traditional cheesemaking in the Iberian Peninsula. However, the full chemical composition of the extract that is added to the milk has never been studied. In this study we investigated the phenolic components of the aqueous extracts from cardoon flowers and their detection in cheese. Analysis by HPLC-diode array detection (HPLC-DAD) revealed the presence of one flavonoid-7-glycoside (isorhoifolin) and the aglycones apigenin and luteolin. Another major flavonoid-7-glycoside (apigenin-7-O-glucuronide) was also identified and its structure elucidated by 13C-NMR. This represents the first report of these compounds in the aqueous extract of cardoon flowers. These compounds were also found in cheese curd made using this coagulant but were not present in the original milk, leading to the suggestion that these phenolic compounds could be used as authentication markers for cheeses made using cardoon extracts as the coagulant.
Keywords: Vegetable coagulant; Cynara spp; Authentication of cheese; PDO cheeses; Flavonoids

Sheetal Gupta, A. Jyothi Lakshmi, M.N. Manjunath, Jamuna Prakash, Analysis of nutrient and antinutrient content of underutilized green leafy vegetables, LWT - Food Science and Technology, Volume 38, Issue 4, June 2005, Pages 339-345, ISSN 0023-6438, DOI: 10.1016/j.lwt.2004.06.012.
(http://www.sciencedirect.com/science/article/B6WMV-4D1YX6J-2/2/08ceb2b780ec25a2c38ae3570ab8a18c)
Abstract:
Analysis of chemical composition of 13 locally available underutilized green leafy vegetables (GLV) was the objective of this study. Moisture, ash and ether extract of the greens were in the range of 73-95 g/100 g, 0.77-3.54 g/100 g and 0.2-0.9 g/100 g, respectively. Four GLV had high iron content (13.15-17.72 mg/100 g) while the rest had lower levels (2.62-9.86 mg/100 g). Calcium content varied largely between the greens ranging from 41 mg/100 g in Polygala erioptera to 506 mg/100 g in Digera arvensis, whereas phosphorous ranged from 16 to 63 mg/100 g. Ascorbic acid was higher in Delonix elata (295 mg/100 g) and Polygala erioptera (85 mg/100 g) and lower in others (3-46 mg/100 g). Thiamine was found to be less than 0.1 mg/100 g in six greens and 0.1-

0.33 mg/100 g in others. Total carotene content ranged between 10 and 35 mg/100 g in all with exceptionally high amount in Cocculus hirsutus (67 mg/100 g) and Delonix elata (60 mg/100 g). [beta]-carotene was 13-25% of total carotene in all greens. Oxalate content was below 100 mg/100 g in five greens and less than 1400 mg/100 g in the remaining GLV. Tannin content ranged between 61 and 205 mg/100 g in all GLV with the exception of Coleus aromaticus (15 mg/100 g) and Delonix elata (1330 mg/100 g).
Keywords: Micronutrient; Macronutrient; Dietary fiber; Tannins; Oxalates; Phytic acid

Peter J. Ng, Graham H. Fleet, Gillian M. Heard, Pesticides as a source of microbial contamination of salad vegetables, International Journal of Food Microbiology, Volume 101, Issue 2, 25 May 2005, Pages 237-250, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2004.11.009.
(http://www.sciencedirect.com/science/article/B6T7K-4FFX9CR-4/2/b934eca2346750c8bd7e49fada74ad04)
Abstract:
Ten commercially available pesticides (insecticides, herbicides and fungicides), used during the production of vegetable produce, were examined as potential sources of microbial contaminants. As purchased, none of the pesticides showed the presence of viable microorganisms (<5 CFU/ml). Using an agar plate diffusion assay, they did not inhibit a range of bacteria of spoilage and public health significance on vegetable produce. After reconstitution in sterile water to their recommended concentration, two of the pesticides supported the survival and growth of inoculated species of Pseudomonas, Salmonella and Escherichia coli. Listeria monocytogenes did not survive after inoculation into any of the pesticides.
Pesticides were reconstituted in different sources of agricultural water (bore, dam and river) and examined for survival and growth of microorganisms naturally present in these waters. On storage at 30 [degree sign]C for 48 h, nine of the pesticides supported the growth of bacterial species present in these waters. Predominant species in the pesticide solutions, before and after storage, varied according to the source, but species of Pseudomonas, Acinetobacter and Aeromonas and various coliforms exhibited significant growth. Unless managed properly (reconstituted in potable water, and used without lengthy storage), pesticides could contribute to the microbial load of vegetable produce, thereby affecting their shelf-life and public health safety.
Keywords: Pesticides; Agricultural chemicals; Food-borne pathogenic bacteria; Spoilage bacteria; Agricultural water; Salad vegetables

F. Mapanda, E.N. Mangwayana, J. Nyamangara, K.E. Giller, The effect of long-term irrigation using wastewater on heavy metal contents of soils under vegetables in Harare, Zimbabwe, Agriculture, Ecosystems & Environment, Volume 107, Issues 2-3, 20 May 2005, Pages 151-165, ISSN 0167-8809, DOI: 10.1016/j.agee.2004.11.005.
(http://www.sciencedirect.com/science/article/B6T3Y-4F7H56S-2/2/e3ca40ddede5be7adf6219c66a8377f3)
Abstract:
The magnitude of contamination, regulatory compliance and annual loadings of soils with copper (Cu), zinc (Zn), cadmium (Cd), nickel (Ni), chromium (Cr) and lead (Pb) were determined at three sites in Harare where wastewater was used to irrigate vegetable gardens for at least 10 years. Heavy metal total concentrations (mg kg-1) in sandy and sandy-clay soils of pH 5.1-8.1 from all sites ranged from 7.0 to 145 for Cu, 14 to 228 for Zn, 0.5 to 3.4 for Cd, <0.01 to 21 for Ni, 33 to 225 for Cr and 4 to 59 for Pb in the 0-20 cm soil depths. The concentrations had increased significantly in the gardens compared with control soils and subsoil. Annual heavy metal loading rates showed that within 5-60 years, all studied heavy metals would have exceeded their permitted limits in soils, depending on site. It was concluded that the use of wastewater in urban horticulture enriched soils with heavy metals to concentrations that may pose potential environmental and health risks in the long-term.

Keywords: Heavy metals; Soil; Contamination; Wastewater; Irrigation

John W. Goodrum, Daniel P. Geller, Influence of fatty acid methyl esters from hydroxylated vegetable oils on diesel fuel lubricity, Bioresource Technology, Volume 96, Issue 7, May 2005, Pages 851-855, ISSN 0960-8524, DOI: 10.1016/j.biortech.2004.07.006.
(http://www.sciencedirect.com/science/article/B6V24-4DBCFMH-2/2/17cda0bbee5c83e84819609d93711213)
Abstract:
Current and future regulations on the sulfur content of diesel fuel have led to a decrease in lubricity of these fuels. This decreased lubricity poses a significant problem as it may lead to wear and damage of diesel engines, primarily fuel injection systems. Vegetable oil based diesel fuel substitutes (biodiesel) have been shown to be clean and effective and may increase overall lubricity when added to diesel fuel at nominally low levels. Previous studies on castor oil suggest that its uniquely high level of the hydroxy fatty acid ricinoleic acid may impart increased lubricity to the oil and its derivatives as compared to other vegetable oils. Likewise, the developing oilseed Lesquerella may also increase diesel lubricity through its unique hydroxy fatty acid composition. This study examines the effect of castor and Lesquerella oil esters on the lubricity of diesel fuel using the High-Frequency Reciprocating Rig (HFRR) test and compares these results to those for the commercial vegetable oil derivatives soybean and rapeseed methyl esters.
Keywords: Lubricity; Biodiesel; Castor; Lesquerella; Methyl esters; HFRR; Diesel fuel; Soybean oil; Rapeseed oil

Marica Solina, Paul Baumgartner, Robert L. Johnson, Frank B. Whitfield, Volatile aroma components of soy protein isolate and acid-hydrolysed vegetable protein, Food Chemistry, Volume 90, Issue 4, May 2005, Pages 861-873, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.06.005.
(http://www.sciencedirect.com/science/article/B6T6R-4D34M1K-2/2/4a8769b87d7b69aa2d1b24aebbedef82)
Abstract:
The volatile aroma components of soy protein isolate (SPI) and acid-hydrolysed vegetable protein (aHVP) were compared by gas chromatography-mass spectrometry (GC-MS) and gas chromatography olfactometry (GCO). Major differences were found between the two soy-based products. Aliphatic aldehydes and ketones were mainly found in SPI, whereas pyrazines and sulphur-containing compounds were dominant in aHVP. Analyses of the non-volatile components showed that SPI was mainly protein (82.5%) with some lipid (3.5%), whereas aHVP contained no protein, only free amino acids (18.4%) and a trace quantity of lipid (0.4%). Polyunsaturates (47.8%), followed by saturates (24.9%) and monounsaturates (14.8%) dominated the fatty acid profile of the SPI lipid fraction. Both SPI and aHVP had a free fatty acid content <0.1%. Sensory analyses of aqueous suspensions of SPI and aHVP demonstrated significant differences in the odours of the two products. Compounds responsible for some of these differences were identified by GCO and GC-MS analyses of aqueous suspensions. The possible role of SPI and aHVP in the development of aroma in extrudates containing these soy products is discussed.
Keywords: Soy protein isolate; Acid-hydrolysed vegetable protein; Aroma; Volatiles; Non-volatiles

T. G. Matuda, D. F. Parra, A. B. Lugao, C. C. Tadini, Influence of vegetable shortening and emulsifiers on the unfrozen water content and textural properties of frozen French bread dough, LWT - Food Science and Technology, Volume 38, Issue 3, May 2005, Pages 275-280, ISSN 0023-6438, DOI: 10.1016/j.lwt.2004.06.001.
(http://www.sciencedirect.com/science/article/B6WMV-4CVV6R6-1/2/df097a4dd3dbde527c6ab3c8828903e0)
Abstract:

The influence of vegetable shortening (VS) and emulsifiers (calcium stearoyl-2-lactylate (CSL) and polysorbate 80 (PS80)) on frozen French bread dough has been studied. Eight formulations without yeast were used with different quantities of VS, CSL and PS80. Dough was prepared by mixing all ingredients in a dough mixer at two speeds. The fresh dough was divided into 60 g pieces and molded. Fresh dough samples were also collected for water content and textural analyses. The dough pieces were packed, frozen in a freezer at -30[degree sign]C and stored at -18[degree sign]C up to 56 days. After 2, 7, 21, 28 and 56 days of frozen storage, samples were removed from the freezer, thawed at ambient temperature and textural analyses were conducted.
The enthalpy of freezable water on fresh bread dough was determined by Differential Scanning Calorimetry (DSC) at the heating rate of 3[degree sign]C/min, temperature range of -40[degree sign]C to 20[degree sign]C. The value of unfrozen water was 0.30-0.34 g H2O/g solids and additives used during the storage up to 56 days significantly affected the textural properties of frozen dough.
Keywords: Frozen dough; French bread; DSC; Textural properties

Gang Wu, Tadashi Miyata, Susceptibilities to methamidophos and enzymatic characteristics in 18 species of pest insects and their natural enemies in crucifer vegetable crops, Pesticide Biochemistry and Physiology, Volume 82, Issue 1, May 2005, Pages 79-93, ISSN 0048-3575, DOI: 10.1016/j.pestbp.2005.01.001.
(http://www.sciencedirect.com/science/article/B6WP8-4FH5K41-2/2/3a8c87fedd9d8bb55d1960898ffdff3c)
Abstract:
The susceptibilities to methamidophos as well as the kinetic and inhibitory parameter of acetylcholinesterases (AChE) and the activities of carboxyestsrases (CarE) and glutathione-S-transferases (GST) were studied in 18 species field populations of insects collected in Fuzhou, China during April and May 2000 and 2001. The insect species included five hymenopteran endoparasitoids, one hymenopteran exoparasitoid, one hymenopteran hyperparasitoid, one dipteran predator, four coleopteran predator ladybirds, six herbivorous pest insects of lepidoptera, diptera, homoptera, and coleoptera, respectively. There existed significant correlations between the susceptibility to methamidophos and the ki values of AChE to methamidophos, dichlorvos, and carbofuran and between the ki and Vmax values of AChE among 18 species of insects. The six herbivorous pests and four ladybirds showed significantly low ki and Vmax values of AChE compared to the seven parasitoids and predator Epistrophe balteate. It was difficult to correlate the susceptibility to methamidophos or the ki values with the Km values of AChE, or with the activity of CarE and GST. The activities of CarE and GST varied depending on the different insect species. Significant synergisms of piperonyl butoxide (PB), triphenyl phosphate (TPP), and diethyl maleate (DEM) with methamidophos were observed in 14 pest insects and their natural enemies. Synergisms of PB were found to be the greatest. Reduced ki values suggested that insensitive AChE might play a critical role in the tolerance to methamidophos in the 18 insect species. The detoxification enzymes, mixed-function oxidase (MFO), CarE, and GST, were believed to be involved in the tolerance to methamidophos. MFO might play the most important role, and CarE or GST might be important in the tolerance in some insect species. Different models of tolerance to methamidophos and enzymatic potential were existed in parasitoids, predators, and herbivores based on the different selection of insecticide pressure (either directly by exposing to the spray in the field, or indirectly by the insecticides penetrated into the body of host insects) as well as different ecological and biological habitats.
Keywords: Methamidophos; Acetylcholinesterase; Detoxification enzyme; Synergists; Pest insects; Natural enemies

Xuetong Fan, Kimberly J.B. Sokorai, Assessment of radiation sensitivity of fresh-cut vegetables using electrolyte leakage measurement, Postharvest Biology and Technology, Volume 36, Issue 2, May 2005, Pages 191-197, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2004.12.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4FNCVX8-2/2/2805bc0e4e30772d66f00ec60c3d316c)
Abstract:
A study was carried out to assess the use of electrolyte leakage measurement to evaluate radiation sensitivity of 13 fresh-cut vegetables, and correlated radiation sensitivity with endogenous antioxidant capacity. Fresh-cut vegetables were gamma irradiated at doses up to 3 kGy at 0.5 kGy intervals. Electrolyte leakage of the samples was measured following irradiation. Electrolyte leakage increased linearly with higher radiation dose for all vegetables. The radiation sensitivity, judged from the rates of the increase in electrolyte leakage as a function of radiation doses and from the doses that increased electrolyte leakage by 50% over the non-irradiated controls varied among vegetables. Red cabbage, broccoli and endive had the highest radiation resistance while celery, carrot and green onion were the most sensitive to radiation. The radiation sensitivity was not necessarily correlated with endogenous antioxidant capacity or phenolics content of the vegetables, which showed large variation among the test samples. Electrolyte leakage may be a useful tool to predict a given product's ability to tolerate irradiation.
Keywords: Irradiation; Electrolyte leakage; Fresh-cut vegetables; Radiation sensitivity; Antioxidants

Randal L. Shogren, Randall J. Rousseau, Field testing of paper/polymerized vegetable oil mulches for enhancing growth of eastern cottonwood trees for pulp, Forest Ecology and Management, Volume 208, Issues 1-3, 5 April 2005, Pages 115-122, ISSN 0378-1127, DOI: 10.1016/j.foreco.2004.11.019.
(http://www.sciencedirect.com/science/article/B6T6X-4F3810M-3/2/f2bb322852200e7e3cba7f3e4d28bc82)
Abstract:
Field studies of biodegradable polymerized vegetable oil-coated paper mulches were conducted to determine if these could replace non-degradable polyethylene mulches for stopping weeds and promoting growth of cottonwood trees. Tests were conducted over two growing seasons in two adjacent field sites in southeastern Missouri. At the end of the 2001 season, eastern cottonwood trees grown on the coated paper mulches had average heights (4.57-4.66 m, 15.0-15.3 ft), which were not significantly different from the control black polyethylene mulch (4.75 m, 15.6 ft). Tree heights were significantly less for uncoated paper mulch (4.45 m, 14.6 ft) or no mulch (3.90 m, 12.8 ft), presumably due to heavy weed growth around the trees. Uncoated paper mulch was extensively degraded after only about 4 weeks, while the coated paper persisted until the fall. Addition of ZnO to the oil coating delayed the onset of visible degradation, such as the formation of holes and tears, especially near the buried edge and above the drip tube. Similar results were seen for the 2002 study except that weed growth was not extensive so that tree heights for the mulched and bare plots were not significantly different. These results suggest that polymerized vegetable oil-coated paper mulches can function as effective mulches during the first year of tree growth, and thus, eliminate the need to use non-degradable polyethylene mulches.
Keywords: Mulch; Paper; Soybean oil; Cottonwood

Olena Stabnikova, Jing-Yuan Wang, Hong Bo Ding, Joo-HwaTay, Biotransformation of vegetable and fruit processing wastes into yeast biomass enriched with selenium, Bioresource Technology, Volume 96, Issue 6, April 2005, Pages 747-751, ISSN 0960-8524, DOI: 10.1016/j.biortech.2004.06.022.
(http://www.sciencedirect.com/science/article/B6V24-4D48YV9-1/2/59ee3279aae027f683f98e7542d36e2f)

Abstract:
Water extracts of cabbage, watermelon, a mixture of residual biomass of green salads and tropical fruits were used for yeast cultivation. These extracts contained from 1420 to 8900 mg/l of dissolved organic matter, and from 600 to 1800 mg/l of nitrogen. pH of the extracts was in the range from 4.1 to 6.4. Biomass concentration of yeast, Saccharomyces cerevisiae CEE 12 grown at 30 [degree sign]C for 96 h in the sterilized extracts without any nutrient supplements was from 6.4 to 8.2 g/l; content of protein was from 40% to 45% of dry biomass. The yield was comparable with the yield of yeast biomass grown in potato dextrose broth. The biomass can be considered as the protein source. Its feed value was enhanced by incorporation of selenium in biomass to the level of 150 [mu]g/g of dry biomass. Therefore, it was recommended to transform the extracts from vegetable and fruit processing wastes into the yeast biomass enriched with selenium.
Keywords: Vegetable and fruit processing wastes; Yeast; Cultivation; Feed protein; Selenium

M.A. Radwan, M.M. Abu-Elamayem, M.H. Shiboob, A. Abdel-Aal, Residual behaviour of profenofos on some field-grown vegetables and its removal using various washing solutions and household processing, Food and Chemical Toxicology, Volume 43, Issue 4, April 2005, Pages 553-557, ISSN 0278-6915, DOI: 10.1016/j.fct.2004.12.009.
(http://www.sciencedirect.com/science/article/B6T6P-4FFNBW9-2/2/b7df68c7065acc2c0cef2e4daa2f3883)
Abstract:
Profenofos (Selecron 72% EC), was sprayed on field-grown pepper and eggplant at the recommended rate of 1.28 kg a,i/ha. Fruit samples were collected at 1 h to 14 days after application and analysed to determine the content and dissipation rate of profenofos. The effect of different washing solutions and some household processing on the removal of such residues from treated vegetables were also investigated. Profenofos residues were quantified by using gas chromatography. The results showed that the consumable safety time were found to be 10 days on sweet pepper and 14 days on hot pepper and eggplant fruits. The initial disappearance of profenofos appeared to follow first order kinetics with different rates of reaction of 0.38, 0.40 and 0.35 day-1 for hot pepper, sweet pepper and eggplant, respectively. The corresponding half-lives (t1/2) were 1.84, 1.74 and 1.96 days. Also, the results indicated that tap water, potassium permenganate and acetic acid solution gave high percent removal of profenofos residues from hot and sweet pepper fruits, while no detectable residues was found in eggplant fruit after washing with soap and acetic acid solutions. In general, all tested washing solutions gave higher percent removal of profenofos residues from eggplant fruit than the two other pepper fruits. Blanching and frying of pepper and eggplant fruits resulted in great reduction to almost completely removed (~100%) of the deposited profenofos. In addition, pickling process removed 92.58 and 95.61% from hot pepper fruit after one week and after two weeks, respectively.
Keywords: Residues; Profenofos; Eggplant; Green pepper; Washing solutions; Household processing

J.C.O. Santos, I.M.G. Santos, A.G. Souza, Effect of heating and cooling on rheological parameters of edible vegetable oils, Journal of Food Engineering, Volume 67, Issue 4, April 2005, Pages 401-405, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.05.007.
(http://www.sciencedirect.com/science/article/B6T8J-4DTJSJG-1/2/1ba3b229bf85f668177136bb7df0bf87)
Abstract:
In this work, the temperature-dependent rheological behavior of un-used and used vegetable cooking oils was evaluated. The un-used edible oils (soybean, sunflower, olive, rapeseed, corn, rice and the mixtures soybean + olive and sunflower + olive) presented Newtonian behavior above 10 s-1 shear rates; the values of viscosity during heating and cooling were similar, indicating that degradation of the oils did not happen at the temperature range studied (10-80 [degree sign]C).

After treatment at frying condition (190 [degree sign]C), there was an increase of the edible oils' viscosity, depending on frying time, perhaps due to the increase of saturation of the oil constituents. The rheological behavior of used cooking oils remained Newtonian at shear rates greater than 10 s-1.
Keywords: Edible oils; Soybean oil; Sunflower oil; Olive oil; Rapeseed oil; Corn oil; Rice oil; Rheology; Degradation

M.S. Mkhabela, P.R. Warman, The influence of municipal solid waste compost on yield, soil phosphorus availability and uptake by two vegetable crops grown in a Pugwash sandy loam soil in Nova Scotia, Agriculture, Ecosystems & Environment, Volume 106, Issue 1, 30 March 2005, Pages 57-67, ISSN 0167-8809, DOI: 10.1016/j.agee.2004.07.014.
(http://www.sciencedirect.com/science/article/B6T3Y-4DJ4CG9-4/2/1ead3a1d7eca1e57b712b99d139dccb0)
Abstract:
Organic materials applied to soils can influence soil phosphorus (P) dynamics. The purpose of this study was to evaluate the effects of municipal solid waste (MSW) compost on soil P availability and uptake by potato (Solanum tuberosum) and sweet corn (Zea mays) crops grown in a Pugwash sandy loam soil in Nova Scotia, Canada. Three rates of compost (MSW1, MSW2 and MSW3), one rate of chemical fertilizer (NPK) and one mixture of 1/2 MSW compost and 1/2 NPK fertilizer (MIXTURE) were used on both crops according to soil P test results. During the second year, another treatment with the recommended levels of NK fertilizer was added. The experimental design was a randomised complete block design with four replications. The NPK and MIXTURE treatments produced significantly($P < 0.05$) higher yields (both crops) than the MSW compost treatments in 1996, while in 1997, the yields were not significantly different for all treatments (both crops). All the MSW compost treatments had lower tissue N compared to the inorganic fertilizer and MIXTURE treatments. The MSW compost and the MIXTURE treatments resulted in statistically equivalent concentrations of tissue P as the NPK treatment in both crops and both years. Tissue P concentration in potatoes ranged from 1.92 to 2.25 and 2.60 to 3.17 g kg-1, while in corn it ranged from 3.08 to 3.46 and 2.32 to 3.16 g kg-1 in 1996 and 1997, respectively. The MSW compost and MIXTURE treatments generally resulted in equivalent concentration of Mehlich-3 extractable soil P compared to the inorganic fertilizer. In addition, the application of both inorganic fertilizer and MSW compost decreased P adsorption by the Pugwash soil by up to 30%. Municipal solid waste compost may be a good source of P for both potatoes and sweet corn. However, the low availability of compost-N means that supplementary N in the form of inorganic fertilizer may have to be added together with compost in order to enhance N availability to crops.
Keywords: Compost; P-availability; P-uptake; P-adsorption; Potatoes; Sweet corn

Jonathan Filley, New lubricants from vegetable oil: cyclic acetals of methyl 9,10-dihydroxystearate, Bioresource Technology, Volume 96, Issue 5, March 2005, Pages 551-555, ISSN 0960-8524, DOI: 10.1016/j.biortech.2004.06.017.
(http://www.sciencedirect.com/science/article/B6V24-4D99SDN-6/2/3bf125f9fed7c476b5280da380532567)
Abstract:
Potential new lubricants and fuel lubricity enhancers have been prepared from methyl 9,10-dihydroxystearate and long chain aldehydes to form the corresponding cyclic acetals. These materials are oils down to low temperatures, as compared to symmetric ketals derived from the same diol, which are waxes at room temperature. The acetals form in an equilibrium reaction (Keq [approximate] 60) which suggests they will be stable as fuel additives. The viscosities of the new oils are close to those predicted for normal paraffins with the same number of non-hydrogen atoms, but the acetal structure has subtle effects on viscosity as compared to branched alkanes. Acetals with long alkyl branches maintain higher viscosity on a molecular weight basis compared

to branched alkanes. The qualitative relationship between branch length and viscosity is discussed. These acetals are potential candidates for novel biobased lubricants.
Keywords: Acetal; Ketal; Dihydroxystearate; Lubricant; Lubricity; Equilibrium; Viscosity; Branching

J. M. N. Marikkar, H. M. Ghazali, Y. B. Che Man, T. S. G. Peiris, O. M. Lai, Use of gas liquid chromatography in combination with pancreatic lipolysis and multivariate data analysis techniques for identification of lard contamination in some vegetable oils, Food Chemistry, Volume 90, Issues 1-2, March-April 2005, Pages 23-30, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.03.021.
(http://www.sciencedirect.com/science/article/B6T6R-4C8P8F4-3/2/a2fa7cea0d1b1139c3881ca0951a350a)
Abstract:
A study was conducted to investigate the use of gas liquid chromatography (GLC) to identify lard (LD) contamination in palm oil (PO), palm kernel oil (PKO), and canola oil (CLO). Vegetable oils were deliberately adulterated with animal fats such as LD, beef tallow (BT), and chicken fat (CF) in varying proportions. In order to monitor the fatty acid (FA) compositional changes due to adulteration, GLC analyses of fatty acid methyl esters (FAME) were performed on 2-monoacylglycerol (2-MG) and neutral triacylglycerol (TAG) isolated from each sample. For the evaluation of FA data, multivariate statistical techniques were employed. The results showed that canonical discriminant (CANDISC) analysis was the most effective technique for discriminating LD-adulterated samples from those adulterated with other animal fats. Additionally, mathematical equations obtained by simple regression analysis could be used for quantification of LD contents in admixtures.
Keywords: Adulteration; Animal fat; Gas liquid chromatography; Lard; Vegetable oils; Multivariate data analysis

H. L. Gan, Y. B. Che Man, C. P. Tan, I. NorAini, S. A. H. Nazimah, Characterisation of vegetable oils by surface acoustic wave sensing electronic nose, Food Chemistry, Volume 89, Issue 4, March 2005, Pages 507-518, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.03.005.
(http://www.sciencedirect.com/science/article/B6T6R-4C8P8F4-1/2/9f8d678f6adef7d081cae1bed7f29820)
Abstract:
Flavour analysis is typically performed by human organoleptic analysis, which is often expensive and subjective. A novel approach using a surface acoustic wave sensing electronic nose (zNoseTM) for flavour analysis was explored to characterise 16 types of vegetable oils. Fatty acid composition, iodine value, peroxide value, p-anisidine value and free fatty acid analyses were conducted to determine the quality and characteristics of vegetable oils. The zNoseTM was employed successfully for qualitative distinction of flavour in different vegetable oils. This is achieved using a visual fragrance pattern, called a VaporPrintTM, derived from the frequency of the SAW detector. VaporPrintTM was shown to be particularly useful for assessing vegetable oil aroma profile in its entirety. This image is created by transforming the time variable to a radial angle with the beginning and end of the analysis occurring at 0[degree sign], or vertical. A Chemometric method, particularly principal component analysis (PCA), was conducted for electronic nose data processing and identification. Analysis of the score plot of the PCA for the zNoseTM measurement showed that 97% of the total variance in the data was described by PC 1 and PC 2. The loading plot revealed that five compounds (m,k,n,s, and p) were important for differentiate the vegetable oils.
Keywords: Characterisation; Electronic nose; Fingerprint; PCA; Vegetable oil

Esma Kozan, Bahadir Gonenc, Oguz Sarimehmetoglu, Hasan Aycicek, Prevalence of helminth eggs on raw vegetables used for salads, Food Control, Volume 16, Issue 3, March 2005, Pages 239-242, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2004.02.005.

(http://www.sciencedirect.com/science/article/B6T6S-4CYGS6G-1/2/94eb6efc4e0608ba23935249d15bf44b)
Abstract:
The presence of helminth eggs on raw vegetables, including lettuce, parsley, green onions, cucumbers, carrots, red cabbage, tomatoes, rockets (Eruca sativa), and green-peppers from wholesalers in Ankara, Turkey was determined. A total of 203 unwashed and 406 washed samples were assayed by light microscopy. Helminth eggs were detected in 12 (5.9%) of 203 unwashed samples and not in any washed samples ($p<0.05$).
Helminth eggs detected in unwashed samples included Taenia spp. (3.5%), Toxocara spp. (1.5%), and Ascaris lumbricoides (1.0%) eggs. Taenia spp. eggs were recovered to be highest number (n=130), followed by Toxocara spp. eggs (n=21). Approximately 11% of unwashed lettuce and parsley was contaminated compared with only 2.5% of carrot samples. No helminth eggs were detected in red cabbage, rockets, tomatoes or green-peppers.
These results highlight the potential for transmission of helminth eggs by unwashed salad vegetables in Turkey and the importance of properly washing/disinfecting raw vegetables before consumption.
Keywords: Vegetables; Human pathogens; Helminth eggs; Washing; Disinfecting

V.H. Tournas, Moulds and yeasts in fresh and minimally processed vegetables, and sprouts, International Journal of Food Microbiology, Volume 99, Issue 1, 1 March 2005, Pages 71-77, ISSN 0168-1605, DOI: 10.1016/j.ijfoodmicro.2004.08.009.
(http://www.sciencedirect.com/science/article/B6T7K-4DH2F0D-1/2/f5ec5d5f5a8f1105cefc712ce95592bb)
Abstract:
A limited survey of fresh and minimally processed vegetables, and sprouts was conducted in the Washington, DC area to determine if potentially toxigenic and pathogenic fungi were present in these commodities. Thirty-nine ready-to-eat salads, 29 whole fresh vegetables and 116 sprout samples (bean, alfalfa, broccoli, crunchy, garlic, spicy, onion, clover, lentil and multi-seed sprouts) were purchased from 13 local supermarkets and tested for yeast and mould counts as well as the presence of toxigenic moulds. Yeasts were the most prevalent organisms found in these samples, at levels ranging from less than 100 to 4.0x108 cfu/g. Mould counts generally ranged from less than 100 to 4.0x104 cfu/g. Two crunchy sprout samples, however, contained unusually high numbers of Penicillium (1.1x108 and 1.3x108 cfu/g), two alfalfa sprout samples contained Geotrichum populations about 106 cfu/g, and two alfalfa sprout samples had Cladosporium counts higher than 2.5x105 cfu/g. The most common moulds found in fresh and minimally processed vegetables were Cladosporium, Alternaria and Penicillium; less common was Geotrichum. The most frequently isolated moulds from sprouts were Alternaria, Cladosporium, Penicillium, and Phoma. Phoma was especially common in alfalfa sprouts. Fusarium, Rhizopus, Mucor, and Geotrichum were isolated less often.
Keywords: Moulds; Yeasts; Fresh vegetables; Sprouts

Jose M. del Valle, Juan C. de la Fuente, Damian A. Cardarelli, Contributions to supercritical extraction of vegetable substrates in Latin America, Journal of Food Engineering, Volume 67, Issues 1-2, IV Iberoamerican Congress of Food Engineering (CIBIA IV), March 2005, Pages 35-57, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.05.051.
(http://www.sciencedirect.com/science/article/B6T8J-4DB5939-1/2/3f6517bf50cacc4ec3876a724c031125)
Abstract:
This manuscript summarizes basic and applied research on phase equilibrium and mass transfer kinetics involved in high-pressure CO_2 extraction of solid substrates. Most examples relate to the extraction of lipids and essential oils from native Latin American plants. Extraction rates of

vegetable matrices depend on the external mass transfer coefficient (kf), effective solute diffusivity in the solid substrate (De), solute solubility in high-pressure CO2, and solute binding to the solid matrix. The initial stages of the extraction process depend on an operational solubility that is close to the thermodynamic solubility (csat) in the case of lipid extraction from oil-containing plant material, but lower than csat in the case of essential oils, due probably to stronger interactions between essential oils than lipids and the solid matrix. Experimental values of kf exhibited considerable scattering and were several orders of magnitude smaller than corresponding values from literature correlations for the dissolution of solids or evaporation of liquids from films with supercritical fluids (SCFs), due to underestimation of the contribution of internal (solid phase) mechanisms to the total resistance to mass transfer and other aspects. De values were 10-103 or 102-105 times smaller than binary diffusion coefficients of lipids and essential oils, respectively, in high-pressure CO2, suggesting very pronounced limitations to mass transfer within the solid matrices in both cases. The integration of this information for the modeling, simulation, and scaling-up of laboratory data is thoroughly discussed. Finally, an example of economic feasibility is given for the installation of a SCF extraction plant for the recovery of lipids from wheat germ.
Keywords: Effective diffusivity; External mass transfer coefficient; Essential oils; Herbs; Latin America; Lipids; Modeling; Oilseeds; Solubility; Extraction; Spices; Supercritical CO2; Supercritical extraction

Stella M. Alzamora, Daniela Salvatori, Maria S. Tapia, Aurelio Lopez-Malo, Jorge Welti-Chanes, Pedro Fito, Novel functional foods from vegetable matrices impregnated with biologically active compounds, Journal of Food Engineering, Volume 67, Issues 1-2, IV Iberoamerican Congress of Food Engineering (CIBIA IV), March 2005, Pages 205-214, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.05.067.
(http://www.sciencedirect.com/science/article/B6T8J-4DNPVN3-2/2/1cb3d6ac6aac71af3bcd2d0c537c03b5)
Abstract:
Functional foods affect beneficially one or more target functions in the body, beyond adequate nutritional effects, to either improve stage of health and well-being and/or reduce the risk of disease. Lastly, the range of functional foods has grown tremendously. One of the main objectives of the multinational collaborative project entitled 'Emerging preservation techniques for foods of concern in Ibero-America' (CYTED Program), carried out from 1999 to 2004, was to analyze the feasibility of atmospheric and/or in vacuum impregnation treatments to incorporate physiologically active compounds into plant tissues without destroying the initial food matrix. This contribution brings together report of progress in the development of functional fruit and vegetable matrices enriched with probiotics and minerals (calcium and zinc). Main aspects discussed are the kinetics of matrix fortification, the viability of some active compounds and the interactions between calcium, the cell structure and the mechanical properties of fruit and vegetable tissues. Vacuum and/or atmospheric impregnation techniques seem to be feasible technologies for exploitations of fruit and vegetable tissues as new matrices into which functional ingredients can be successfully incorporated, providing novel functional product categories and new commercial opportunities.
Keywords: Functional foods; Vegetable matrix; Mineral and probiotics fortification; Impregnation

Wouter G. van Doorn, In: Jerry A. Bartz and Jeffrey K. Brecht, Editors, Postharvest Physiology and Pathology of Vegetables (second ed.), Marcel Dekker, New York (2002) pp. 744, US$ 224.00, ISBN 0-82470-687-0., Postharvest Biology and Technology, Volume 35, Issue 3, March 2005, Pages 330-331, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2004.09.004.
(http://www.sciencedirect.com/science/article/B6TBJ-4DN9YGJ-C/2/7ae0d0a01f9872c8173f5200c68be0a4)

Xinshan Qi, Shuping Zhang, Yuzhi Wang, Renqing Wang, Advantages of the integrated pig-biogas-vegetable greenhouse system in North China, Ecological Engineering, Volume 24, Issue 3, 20 February 2005, Pages 175-183, ISSN 0925-8574, DOI: 10.1016/j.ecoleng.2004.11.001.
(http://www.sciencedirect.com/science/article/B6VFB-4FMK8F1-1/2/504a0eff73b627d8de17ce4f97f0c688)
Abstract:
An integrated pig-biogas-vegetable greenhouse system (PBVGS) was designed and studied in Laiwu, Shandong Province of North China from 2001 to 2002, where 20 groups of PBVGS and their corresponding controls were investigated. The PBVGS involves building a pigsty and a biogas digester in a vegetable greenhouse, putting pig dung into the biogas digester for fermentation, using the biogas for increasing illumination and air temperature in the greenhouse, and using the fermented waste as organic manure. The data indicate that the pig growth, biogas production and vegetable production were effectively improved in PBVGS, and that ecological, economic and social benefits were simultaneously achieved. The average annual net income of a standard PBVGS was 10,900 RMB, with an increase of 58.0% over its traditional non-integrated parts. It could use up 14,000 kg fresh pig dung and produce 10,000 kg organic manure one year for the improvement of soil fertility. The daily net weight increase for a pig in PBVGS averaged 0.82 kg, 227.6% higher than its controls. The average yield per hectare of cucumbers and tomatoes, increased by 18.4 and 17.8% over their controls, respectively. In addition, the biogas produced in the digester increased by 32.4% annually. Based on biogas fermentation, the PBVGS provides a fine ecological cycle from livestock feeding to vegetable production, resulting in a higher conversion efficiency in nutrient cycle and energy flow.
Keywords: Vegetable greenhouse; Pig feeding; Biogas fermentation; Integrated system; Ecological cycle

Sabrina Moret, Dana Smela, Tiziana Populin, Lanfranco S. Conte, A survey on free biogenic amine content of fresh and preserved vegetables, Food Chemistry, Volume 89, Issue 3, February 2005, Pages 355-361, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.02.050.
(http://www.sciencedirect.com/science/article/B6T6R-4C4BM0D-D/2/ed45b195c638def902e4475b7eda3d03)
Abstract:
A survey on free biogenic amine contents in fresh and preserved vegetable products was carried out. A simple extraction method, involving an homogenisation step with 0.1 M HCl, was applied. Two different derivatization procedures (using o-phthaldialdehyde and dansyl chloride) were applied on different aliquots of the same acid extracts and HPLC analyses were carried out with the same reversed phase (C18) HPLC column. Results obtained with the two procedures were compared. With the exception of sauerkraut, putrescine (0.2-0.5 mg/100 g fresh weight) and spermidine (0.4-4.5 mg/100 g) were always the most represented amines, generally followed by spermine (maximum 1.1 mg/100 g). Tyramine level was 4.9 mg/100 g in canned sauerkraut while other samples presented levels not exceeding 1.2 mg/100 g. The spinach sample showed the highest histamine content (2.0 mg/100 g).
Keywords: Biogenic amines; Tyramine; Vegetable products; HPLC

Mariana Gonzalez, Karina S.B. Miglioranza, Julia E. Aizpun de Moreno, Victor J. Moreno, Evaluation of conventionally and organically produced vegetables for high lipophilic organochlorine pesticide (OCP) residues, Food and Chemical Toxicology, Volume 43, Issue 2, February 2005, Pages 261-269, ISSN 0278-6915, DOI: 10.1016/j.fct.2004.10.002.
(http://www.sciencedirect.com/science/article/B6T6P-4DTKJDX-2/2/3724693f1ad838ea7b84efe148c075a0)
Abstract:

The occurrence and distribution of highly hydrophobic organochlorine pesticide (OCP) in vegetables cultivated under organic and conventional conditions were evaluated. OCP residues in aerial and subterranean tissues of two varieties of lettuce and chard together with the soil where they grown were GC-ECD analyzed. [Sigma]DDTs > [Sigma]Chlordane > [Sigma]Heptachlor > [Sigma]Aldrins was the OCP distribution pattern in all samples. Conventional soils had higher OCP residues than organic one, even though levels were bellow 5 ng/g dry weight, indicative of low polluted agricultural environments. Vegetables accumulated OCP efficiently with residue levels 4x to 45x fold greater than those of soils. OCP tissue-dependent distribution was found to be upon the physicochemical characteristics of the pollutants (Koa and Kow). Lettuce showed a high variability in pesticide uptake regarding varieties and tillage practices. In spite of analyzed pesticides are banned or restricted, edible tissues of vegetables from both farms showed detectable residues of these compounds even though at levels below the allowed by the Codex Alimentarius. Thus, environmental conditions like presence or absence of trees, hedgerows or nearby to conventional farms influence on OCP occurrence and levels in vegetables organically grown.
Keywords: Organochlorine pesticides; Leafy vegetables; Lettuce; Chard; Organic production; Plant uptake

G. O. Veloso, V. G. Krioukov, H. A. Vielmo, Mathematical modeling of vegetable oil extraction in a counter-current crossed flow horizontal extractor, Journal of Food Engineering, Volume 66, Issue 4, February 2005, Pages 477-486, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.04.019.
(http://www.sciencedirect.com/science/article/B6T8J-4CJVD48-7/2/8c00421434aed4ded1adc9e906b72dfa)
Abstract:
In this work a new mathematical model of vegetable oil extraction in an industrial 'De Smet' type extractor is proposed to predict the concentration distributions in percolation sections and at the outlets. Oil losses are also considered. The model incorporates counter-current crossed flow of the porous media and the miscela, mass transfer between the expanded flakes and the miscela, diffusion in the entire extraction field, miscela transport between the percolation sections, influence of loading and drainage zones, and transient operational regimes of the extractor. The model is composed of sub-models for the percolation sections, trays, drainage and loading zones. The sub-models are coupled to each other by means of the boundary conditions, and reflect the particularities of counter-current flow. The calculation algorithm is based on the method of lines. The variations in concentration distributions of bulk and pore phases, and their properties, such as: waves, slopes, steps, etc., are presented.
Keywords: Mathematical model; Food processing; Counter-current crossed flow; Oil extraction; Porous media

Jane Wardle, Susan Carnell, Lucy Cooke, Parental control over feeding and children's fruit and vegetable intake: How are they related?, Journal of the American Dietetic Association, Volume 105, Issue 2, February 2005, Pages 227-232, ISSN 0002-8223, DOI: 10.1016/j.jada.2004.11.006.
(http://www.sciencedirect.com/science/article/B758G-4F9ST3V-N/2/aa8e78680984a8e05eb7818fc039e3a8)
Abstract: Objectives
To replicate the finding of a negative association between parental control and fruit and vegetable consumption in girls. To extend the investigation to boys and examine sex differences. To test the hypothesis that children's food neophobia explains this association.Design
Cross-sectional questionnaire survey.Measures
The questionnaire included items assessing parents' and children's fruit and vegetable intake, the Parental Control Index, and the Child Food Neophobia Scale.Subjects

Parents of 564 2- to 6-year-old children, recruited from 22 London nursery schools.Statistical analysis
Relationships between continuous variables were examined with Pearson product moment correlation coefficients. Sex differences were tested using independent sample t tests, and sex differences in correlations were assessed from their 95% confidence intervals. Parental control and children's food neophobia were entered into a hierarchical multiple regression to test the hypothesis that neophobia explains the association between parental control and children's fruit and vegetable intake.Results
We replicated the finding that parental control was correlated with children's fruit and vegetable consumption and found no significant sex differences. Parental fruit and vegetable consumption and children's food neophobia were also strong predictors of children's fruit and vegetable consumption, and both were associated with parental control, suggesting that they might explain the association between control and intake. Controlling for children's food neophobia and parental intake reduced the association of parental control with children's fruit and vegetable intake to nonsignificance.Conclusions
These findings emphasize the importance of systematic research about associations between parental feeding styles and children's dietary habits so that dietetics professionals can give parents sound advice.

Gloria J. Stables, Elizabeth M. Young, Mollie W. Howerton, Amy Lazarus Yaroch, Sarah Kuester, Mary Kay Solera, Kathleen Cobb, Linda Nebeling, Small school-based effectiveness trials increase vegetable and fruit consumption among youth, Journal of the American Dietetic Association, Volume 105, Issue 2, February 2005, Pages 252-256, ISSN 0002-8223, DOI: 10.1016/j.jada.2004.11.031.
(http://www.sciencedirect.com/science/article/B758G-4F9ST3V-T/2/0f849b56cacb79c2b7b73886cd786288)
Abstract:
This article profiles a research initiative of state health agency-initiated 5 A Day school-based interventions. Four of the seven projects reviewed had significant results, with an average effect size of 0.4 servings of vegetables and fruit. Results are comparable with the larger-scale, well-controlled, and more costly 5 A Day For Better Health efficacy trials. These comparable findings underscore the value of assessing effectiveness of interventions in real-world settings to potentially enable wide-scale implementation of tested strategies. These small effectiveness trials show that school-based interventions are feasible to implement using current and effective strategies, and may facilitate translation of health promotion research to practice. The projects fostered valuable research/practice partnerships at the community level. Limitations across studies included heterogeneity in research methods, participant attrition, and variability in reporting data. Further research is needed to develop standardized, cost-effective dietary assessment methodology for viable dissemination research in community settings.

Carine Anna Vereecken, Wendy Van Damme, Lea Maes, Measuring attitudes, self-efficacy, and social and environmental influences on fruit and vegetable consumption of 11- and 12-year-old children: Reliability and validity, Journal of the American Dietetic Association, Volume 105, Issue 2, February 2005, Pages 257-261, ISSN 0002-8223, DOI: 10.1016/j.jada.2004.11.008.
(http://www.sciencedirect.com/science/article/B758G-4F9ST3V-V/2/04025b1025a9ff6ed263a681bae7d0ea)
Abstract:
This article examines the reliability and construct validity of questions assessing mediating factors of fruit and vegetable consumption among 11- and 12-year-old children (N=207). Internal consistencies were good for most scales, ranging from 0.56 to 0.94. Intraclass correlation coefficients between test and retest were acceptable, ranging from 0.39 to 0.90. Concerning

predictive validity, preferences and perceived parental and peer behavior were significantly associated with fruit and vegetable consumption. Self-efficacy in difficult situations and a variety of available fruit were significantly correlated with fruit consumption, while permissive eating practices and obligation rules were significantly correlated with vegetable consumption. General attitudes, outcome expectations, selection efficacy, and encouraging practices were not associated with fruit or vegetable consumption.

D.P. Overy, J.C. Frisvad, U. Steinmeier, U. Thrane, Clarification of the agents causing blue mold storage rot upon various flower and vegetable bulbs: implications for mycotoxin contamination, Postharvest Biology and Technology, Volume 35, Issue 2, February 2005, Pages 217-221, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2004.08.001.
(http://www.sciencedirect.com/science/article/B6TBJ-4F05G4Y-1/2/d1f7debfb2f23deb9ea05b9ba0471f0f)
Abstract:
A considerable number of blue mold rot reports of various commercially grown bulbs and vegetables in the literature have been based on outdated taxonomy attributing crop losses to Penicillium corymbiferum Westling (a synonym of P. hirsutum Dierkx). The species P. corymbiferum has recently been subdivided into seven taxa which comprise the Pencillium series Corymbifera: P. albocoremium, P. allii, P. hirsutum, P. hordei, P. radicicola, P. tulipae and P. venetum. Results from pathogencity trials indicated that P. allii was the predominant pathogen of Allium cepa (red onion) and Allium sativum; however it did not infect either tulip or gladiolus. P. hirsutum, P. radicicola, P. tulipae and P. venetum were predominant pathogens of Tulipa gesneriana and P. hirsutum, P. tulipae and P. venetum were predominant pathogens of a Gladiolus sp. Six of the Corymbifera taxa (excluding P. hordei) caused a rot in the basal root plate of A. cepa (yellow onion); however as P. tulipae produces the mycotoxin penitrem A, which has been previously implicated in tremorgenic toxicosis, spoilage of yellow onion during storage due to this fungus is of particular concern.
Keywords: Penicillium bulb rot; Allium cepa; Allium sativum; Tulipa gesneriana; Gladiolus sp.; Mycotoxins

J. Gordon Bell, Fiona McGhee, James R. Dick, Douglas R. Tocher, Dioxin and dioxin-like polychlorinated biphenyls (PCBs) in Scottish farmed salmon (Salmo salar): effects of replacement of dietary marine fish oil with vegetable oils, Aquaculture, Volume 243, Issues 1-4, 3 January 2005, Pages 305-314, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2004.10.016.
(http://www.sciencedirect.com/science/article/B6T4D-4DTTFMP-3/2/ae7e0f89179b08675bc395bbb9233d88)
Abstract:
Duplicate groups of Atlantic salmon were fed one of four practical-type diets from first feeding to harvest after 115 weeks. The four diets were low fish oil (17% w/w, LFO), high fish oil (35% w/w, HFO), low vegetable oil (17%, linseed oil [LO]/rapeseed oil [RO], 1:1 w/w; LVO) and high vegetable oil (35%, linseed oil/rapeseed oil, 1:1 w/w; HVO). Following sample collection (average weight 2.1 kg), all groups were switched to the HFO diet for a further 24 weeks. The dioxin concentration in diets was in order HFO>LFO>LVO>HVO, with values ranging from 0.16 to 1.4 ng TEQ/kg. The dioxin-like polychlorinated biphenyl (DL-PCB) concentrations were in the same order with values ranging from 0.62 to 3.68 ng TEQ/kg. Concentrations of dioxins and DL-PCBs in flesh samples were correlated with feed concentrations, but values in flesh were always lower than in feed. Flesh dioxin concentrations ranged from 0.10 to 0.53 ng TEQ/kg and DL-PCBs from 0.58-1.48 ng TEQ/kg. After 24 weeks feeding a fish oil-containing finishing diet (HFO), the flesh dioxin concentrations ranged from 0.20 to 0.54 ng TEQ/kg and the DL-PCBs from 0.66 to 1.07 ng TEQ/kg. Feeding the HVO diet resulted in significant reductions in flesh concentrations of 20:5 n-3 (EPA) and 22:6 n-3 (DHA) to around 25% of the values in fish fed the HFO diet. However, feeding

the HFO finishing diet for 24 weeks resulted in restoration of flesh EPA and DHA concentrations to 80% of the values in fish fed the HFO diet throughout. Feeding the finishing diet resulted in significantly increased dioxin levels in flesh of fish previously fed the LFO, LVO and HVO diets, although values were still significantly lower than in fish fed the HFO diet throughout. This study suggests that salmon cultured on diets based on fish meal and oil (HFO) attain flesh dioxin concentrations that are <14% of the current European Commission limit. However, by replacing marine fish oils with vegetable oils for most of the production cycle, dioxin and DL-PCB concentrations can be substantially reduced.
Keywords: Salmon; Polychlorinated dibenzo-p-dioxins (PCDDs); Polychlorinated dibenzo-p-furans (PCDFs); Polychlorinated biphenyls (PCBs); Fish oil; Vegetable oils

M. A. Lage Yusty, J. L. Cortizo Davina, Supercritical fluid extraction and high-performance liquid chromatography-fluorescence detection method for polycyclic aromatic hydrocarbons investigation in vegetable oil, Food Control, Volume 16, Issue 1, January 2005, Pages 59-64, ISSN 0956-7135, DOI: 10.1016/j.foodcont.2003.11.008.
(http://www.sciencedirect.com/science/article/B6T6S-4BGHHG1-1/2/dc0b095e19ad566fa51075e8d00b0b21)
Abstract:
In spite of the fact that food processes, that involve drying and smoking, may cause polycyclic aromatic hydrocarbon contamination, an extraction clean/up procedure carried out by SFE was developed in order to isolate polycyclic aromatic hydrocarbons from oil vegetable samples for subsequent HPLC-FL determination. The detection and quantification limits obtained were <1.55 [mu]g kg-1 oil and <2.55 [mu]g kg-1 oil, respectively, allowed to check the presence of seven of the eight PAHs with legal limit in olive-pomace oil: benzo[a]anthracene, benzo[e]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenzo[ah]anthracene and benzo[ghi]perilene. In brief, the method permits the evaluation of edible oil safety and, therefore, consumers protection.
Keywords: Polycyclic aromatic hydrocarbons; Oil; SFE; HPLC-FL

Mohammad Izadifar, Neural network modeling of trans isomer formation and unsaturated fatty acid changes during vegetable oil hydrogenation, Journal of Food Engineering, Volume 66, Issue 2, January 2005, Pages 227-232, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.03.010.
(http://www.sciencedirect.com/science/article/B6T8J-4C6KSKH-1/2/42165bf4479edd624590a7a70df6ceef)
Abstract:
A multi-layer neural network model with back-propagation training algorithms was designed to predict total trans isomer content, as well as oleic acid, linoleic acid and linolenic acid during vegetable oil hydrogenation. Eight variables including reaction temperature, H2 pressure, catalyst concentration, mixing rate, iodine value, and initial unsaturated fatty acid contents including oleic, linoleic, and linolenic acid have strong effects on forming trans isomer which is produced during vegetable oil hydrogenation. So the eight variables were considered as independent variables and used as inputs to the Artificial Neural Network (ANN) model. The neural network was trained, tested, and evaluated by use of a large number of experimental data obtained from a pilot-plant hydrogenation reactor and using experimental data of a published paper the network generalization was evaluated. Experimental data were statistically compared with predicted results such that the network predictability was assessed. Statistical assessments showed a very good agreement of predicted and observed results.
Keywords: Modeling; Neural network; Vegetable oil hydrogenation; Trans isomer formation

D. Obeng-Ofori, S. Amiteye, Efficacy of mixing vegetable oils with pirimiphos-methyl against the maize weevil, Sitophilus zeamais Motschulsky in stored maize, Journal of Stored Products

Research, Volume 41, Issue 1, 2005, Pages 57-66, ISSN 0022-474X, DOI: 10.1016/j.jspr.2003.11.001.
(http://www.sciencedirect.com/science/article/B6T8Y-4BXN5PW-1/2/43cbd86ddd7d49490bc957189935224f)
Abstract:
Sitophilus zeamais is a major insect pest of stored maize and grain products in the tropics. The toxicity of coconut, groundnut and soybean oils applied at 1, 2, 5 and 10 ml/kg and pirimiphos-methyl at 2.5, 5 and 10 [mu]l active ingredient in 2 ml of water/kg of grain (, and of the recommended dose), alone or in combination, to adults and immature stages of S. zeamais, the persistence of the treatments in maize grains and their effects on seed viability were evaluated in the laboratory. All the treatments caused significant mortality compared to untreated controls. Low dosages of the oils and pirimiphos-methyl when combined were highly toxic to adult S. zeamais. The mixtures completely inhibited the development of immature stages of the weevil. Only pirimiphos-methyl and the mixtures retained some activity 60 days after application. Pirimiphos-methyl can be used at reduced rates if combined with vegetable oils to control infestations of S. zeamais in stored maize.
Keywords: Vegetable oils; Infestation control; Insecticidal mixtures; Tropical maize; Pirimiphos-methyl

B. Jarimopas, T. Nunak, N. Nunak, Electronic device for measuring volume of selected fruit and vegetables, Postharvest Biology and Technology, Volume 35, Issue 1, January 2005, Pages 25-31, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2004.06.005.
(http://www.sciencedirect.com/science/article/B6TBJ-4DN9YGJ-6/2/7b713b2659d7e7dda818f2587387d5ec)
Abstract:
This paper presents the design, construction, and testing of an electronic device for measuring the volumes of selected fruit and vegetables. The device was designed with reference to the principle of capacitance measurement and consists of three parts: cylindrical casing, electronic circuitry and a personal computer. Volumes recorded by the device in experiments with watermelons, large cucumbers, wax gourds and guavas have been compared with measurements obtained from the water displacement (WD) method. The evaluated parameters included: (i) sample shapes, defined by the ratio of minor and major axes, ranging from 0.252 to 0.946, (ii) diameter of the cylindrical casing (25, 50 and 75 cm), and (iii) orientation of the sample in the casing. Results showed that the electronic device measured sample volumes at error margins ranging from 1.1% (watermelons) to 4.7% (large cucumbers). Varying the angular displacement of samples around the longitudinal axis (0, 90, 180 and 270[degree sign]) did not influence error at the 1% significance level. However, variations in sample shape, cylindrical casing diameter and angular displacement of the sample around the vertical axis (0, 45, 90, 135 and 180[degree sign]) significantly affected error at the 1% significance level. Minimum error was recorded when a 75-cm diameter casing was used and the longitudinal axis of the sample was aligned to that of the casing.
Keywords: Volume; Measurement; Fruit and vegetables

Chris B. Watkins, In: Ramdane Dris, Raina Niskanen and Shri Mohan Jain, Editors, Crop Management and Postharvest Handling of Horticultural Products. Fruits and Vegetables vol. II, Science Publishers Inc., Enfield, NH, USA (2003) (p. 410, ISBN: 1-57808-216-1)., Postharvest Biology and Technology, Volume 35, Issue 1, January 2005, Pages 115-116, ISSN 0925-5214, DOI: 10.1016/j.postharvbio.2004.06.002.
(http://www.sciencedirect.com/science/article/B6TBJ-4DCMJDJ-8/2/0019452e38ea7cd968a6e8813ef44998)

F. Devlieghere, A. Vermeulen, J. Debevere, Chitosan: antimicrobial activity, interactions with food components and applicability as a coating on fruit and vegetables, Food Microbiology, Volume 21, Issue 6, December 2004, Pages 703-714, ISSN 0740-0020, DOI: 10.1016/j.fm.2004.02.008.
(http://www.sciencedirect.com/science/article/B6WFP-4D3W9F4-B/2/641e5aee06aedd8300f76afb162d2545)
Abstract:
Chitosan has recently gained more interest due to its applications in food and pharmaceutics. Among others, the antimicrobial activity of chitosan has been pointed out as one of its most interesting properties of chitosan.
The aim of this study was threefold: (1) the quantification of the antimicrobial effect of chitosan with a deacetylation degree of 94% and a molecular weight of 43 kDa on different psychrotrophic spoilage organisms and food pathogens. (2) The determination of the influence of different food components (starch, whey protein, NaCl and oil) on the antimicrobial effect of chitosan and (3) the investigation of the effects of chitosan coatings on controlling decay of minimally processed fruits and vegetables (strawberry and lettuce). For the first aim several bacteria and yeast were exposed to chitosan concentrations varying from 40 to 750 mg/l. Generally, Gram-negative bacteria seemed to be very sensitive for the applied chitosan (MIC[less-than-or-equals, slant]0.006% (w/v)) while the sensitivity of Gram-positive bacteria was highly variable and that of yeast was intermediary (0.01% (w/v)). To achieve the second aim, the media, with one of these components added, were inoculated with Candida lambica (+/-2 log cfu/ml) and were incubated at 7[degree sign]C until the yeast reached the stationary phase. Starch, whey proteins and NaCl had a negative effect on the antimicrobial activity. Oil conversely had no influence. For the third aim, the chitosan coating was formed by dipping the products in a chitosan-lactic acid/Na-lactate solution from which the pH was adjusted to the pH of the products. These products were equilibrium modified atmosphere (EMA)-packaged, stored at 7[degree sign]C and during storage sensorially and microbiologically evaluated. A chitosan coating on strawberries was applicable while on mixed lettuce the chitosan coating was not applicable due to the development of a bitter taste. The microbiological load on the chitosan-dipped samples was lower for both products. The antimicrobial effect of chitosan on lettuce disappeared after 4 days of storage, while it maintained on the strawberries during 12 days.
Keywords: Chitosan; Antimicrobial coating; Fruit and vegetables

Tim Brown, Janet E. L. Corry, Stephen J. James, Humidification of chilled fruit and vegetables on retail display using an ultrasonic fogging system with water/air ozonation, International Journal of Refrigeration, Volume 27, Issue 8, December 2004, Pages 862-868, ISSN 0140-7007, DOI: 10.1016/j.ijrefrig.2004.04.009.
(http://www.sciencedirect.com/science/article/B6V4R-4D0Y3Y7-2/2/54e7ebe23ef30a230234a82daebfde32)
Abstract:
The effects of an ultrasonic humidification system were assessed during retail display of unwrapped chilled fruit and vegetable produce. Produce and equipment factors were compared during two consecutive 7-day trials, one with fogging (termed `wet') and one without (termed `dry'). No appreciable differences in mean product temperatures were found (4.6 [degree sign]C for wet, 4.3 [degree sign]C for dry), but there were slight differences in cabinet performance in terms of air temperatures and refrigeration effect. Despite a considerable increase in drainage water from the cabinet (53 l per day for wet, 30 for dry), no change to the cabinet's defrost schedule was required. Humidification reduced weight loss with all products. After 7 days of display the highest reduction, almost 50%, was achieved with mushrooms. Humidification also reduced the rate of deterioration in the appearance of the produce on display.
No adverse effects on the microbial quality of samples of produce were found. Slightly higher numbers of airborne microbes were sampled from the air circulating in the cabinet during the wet

trial, but there was no significant increase in numbers of microbes landing on settle plates on the display shelves. Numbers of bacteria in the water sterilisation system were low and no Legionella species were isolated from either the wet or the dry trial water samples.
Keywords: Fruit; Vegetable; Retail sale; Design; Humidification; Ozone; Air; Microbiological quality

O. M. I. Nwafor, Emission characteristics of diesel engine running on vegetable oil with elevated fuel inlet temperature, Biomass and Bioenergy, Volume 27, Issue 5, November 2004, Pages 507-511, ISSN 0961-9534, DOI: 10.1016/j.biombioe.2004.02.004.
(http://www.sciencedirect.com/science/article/B6V22-4CRY5J2-1/2/20693a3488395e035625d313004dc04a)
Abstract:
The world energy demand has, for the last two decades, witnessed uncertainties in two dimensions. Firstly, the price of conventional fossil fuel is too high and has added burden on the economy of the importing nations. Secondly, combustion of fossil fuels is the main culprit in increasing the global carbon dioxide (CO2) level, a consequence of global warming. The scarcity and depletion of conventional sources are also cases of concern and have prompted research world-wide into alternative energy sources for internal combustion engines. Biofuels appear to be a potential alternative 'greener' energy substitute for fossil fuels. The problem of using neat vegetable oils in diesel engines relates to their high viscosity. Experiments were designed to study the effect of reducing viscosity by increasing the inlet temperature of vegetable oil fuel on combustion and emission characteristics of diesel engine. The test results showed that the CO production with heated fuel is a little higher than the diesel fuel at higher loading conditions. The CO concentrations in the exhaust were higher for unheated oil operation compared to other fuels. The heated oil showed marginal increase in CO2 emissions compared to diesel fuel. The hydrocarbon emissions were significantly reduced when running on plant oils. The fuel consumption was a little worse when running on plant fuel. The ignition delay was longer for unheated plant fuel operation.
Keywords: Vegetable oil; Emissions; Fuel consumption; Exhaust temperature and ignition delay

N. Louka, K. Allaf, Expansion ratio and color improvement of dried vegetables texturized by a new process 'Controlled Sudden Decompression to the vacuum': Application to potatoes, carrots and onions, Journal of Food Engineering, Volume 65, Issue 2, November 2004, Pages 233-243, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.01.020.
(http://www.sciencedirect.com/science/article/B6T8J-4BS0FH3-7/2/b4906a2b324cb2434550ad0e3e2b0eff)
Abstract:
A procedure, Controlled Sudden Decompression (Detente Instantanee Controlee DIC(R)) has been developed to impart a porous structure to partially dried pieces of food by expanding them. In this paper, the DIC cycle was optimized for use with special food products. The establishment of an initial vacuum phase prior to the steam treatment, a treatment by step-wise increases in temperature and an atmospheric air injection phase enabled us to process product pieces in a thick layer, very heat-sensitive products or other food products with a low hardening temperature. The physical attributes evaluated were the expansion ratio and color of three vegetables: potatoes, carrots and onions.
Keywords: Decompression; Expansion; Vacuum; Vegetables; Drying

N. Louka, F. Juhel, K. Allaf, Quality studies on various types of partially dried vegetables texturized by Controlled Sudden Decompression: General patterns for the variation of the expansion ratio, Journal of Food Engineering, Volume 65, Issue 2, November 2004, Pages 245-253, ISSN 0260-8774, DOI: 10.1016/j.jfoodeng.2004.01.021.

(http://www.sciencedirect.com/science/article/B6T8J-4BS0FH3-8/2/4e866786b540e5760aef21782ba384d6)
Abstract:
Quality of dried vegetables texturized by Controlled Sudden Decompression (Detente Instantanee Controlee DIC(R)) was studied through the expansion ratio, the color and the degree of cooking. This study was realized as a function of the four main experimental parameters: saturated steam pressure, treatment time, water content of the product before treatment and the thickness of the pieces of the raw product. These parameters are of primary importance in determining the quality of the final product. The behavior of the matter vis-a-vis the treatments was also investigated. It was found that pressure had the highest effect with final product volumes being 2.2-4.5 times those after drying with hot air only. An optimum treatment time of 25 s was defined although for potato, with a denser structure, it was 45 s. General patterns for the variation in expansion ratio as a function of the operating parameters are proposed.
Keywords: Decompression; Expansion; Vacuum; Vegetables; Drying

F. Liu, H. Stutzel, Biomass partitioning, specific leaf area, and water use efficiency of vegetable amaranth (Amaranthus spp.) in response to drought stress, Scientia Horticulturae, Volume 102, Issue 1, 15 October 2004, Pages 15-27, ISSN 0304-4238, DOI: 10.1016/j.scienta.2003.11.014.
(http://www.sciencedirect.com/science/article/B6TC3-4BRPBF7-2/2/726741eec2a33f1e352fdd8116de0354)
Abstract:
Vegetable amaranth (Amaranthus spp.) is a promising C4 crop for semi-arid regions due to its high nutritive value and an ability to adapt to drought stress. A pot experiment in a temperature-controlled greenhouse was conducted to investigate the effects of drought stress on biomass production, partitioning, and water use efficiency (WUE) of four genotypes of vegetable amaranth, viz. `Hin Choi' (A. tricolor), `Co.2' (A. tricolor), `WS80-192' (A. blitum), and `RRC 1027' (A. cruentus). Drought stress significantly decreased plant total dry mass, but the proportion of changes differed among root, stem, and leaf. Under drought, root dry mass ratio was increased in Co.2, WS80-192, and RRC 1027, whereas leaf dry mass ratio was decreased in Hin Choi, Co.2, and RRC 1027. Leaf area per root dry mass was decreased by drought stress in all genotypes examined. These results indicate that drought induced a more conservative balance between water-losing and water-obtaining organs. Specific leaf area (SLA) was decreased by drought stress and differed between genotypes. WUE of the four genotypes of vegetable amaranth was unaffected by drought stress, and ranged from 2.9 to 3.8 g DM kg-1 H2O, being the highest in RRC 1027 and the lowest in WS80-192. A negative relationship between SLA and WUE was observed over the four genotypes of vegetable amaranth under well-watered conditions.
Keywords: Amaranthus spp.; Biomass partitioning; Drought stress; Specific leaf area; Water use efficiency

Bente E. Torstensen, Livar Froyland, Robin Ornsrud, Oyvind Lie, Tailoring of a cardioprotective muscle fatty acid composition of Atlantic salmon (Salmo salar) fed vegetable oils, Food Chemistry, Volume 87, Issue 4, October 2004, Pages 567-580, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.01.009.
(http://www.sciencedirect.com/science/article/B6T6R-4BSVRY0-1/2/1eab08b029f321908e0eb440b82a4e86)
Abstract:
A feeding experiment was performed to investigate the possibility of feeding vegetable oils to Atlantic salmon, followed by a wash-out period to maintain salmon fillet as a product highly beneficial for human health, due to the high levels of VLCn-3 PUFA and high n-3/n-6 ratio. Six groups of Atlantic salmon, initial weight 142 +/- 1 g, were fed increasing dietary inclusion of rapeseed oil (RO) in a regression design and one group was fed a 50% olive oil (OO)/50% capelin

oil (FO) diet for 42 weeks, followed by 25 weeks, of wash-out, when all groups were fed 100% FO. Muscle gross composition, lipid class and fatty acid composition and astaxanthin were measured at the start and after 22 and 42 weeks of feeding. Fillet fatty acid composition was analysed at the start and throughout the wash-out period of 25 weeks and 1788 day degrees. Growth, total lipid, astaxanthin content, and lipid class composition were not affected by dietary oil source. Muscle and fillet fatty acid composition were highly affected by dietary fatty acid composition. Through the wash-out period, the VLCn-3 PUFAs EPA and DHA was restored already after 1300 day degrees, whereas the wash-out of 18:2n-6, 18:1n-9 and 18:3n-3 was a slower process, requiring a minimum 1788 day degrees for reaching 100% FO levels. For reducing n-6 fatty acids and increasing VLCn-3 PUFA, a period of feeding with 100% FO was sufficient for the groups fed 25% RO, 50% RO and 50% OO prior to wash-out. Considering the recommended n-3/n-6 ratio and VLCn-3 PUFA intake for human consumption, fillets from fish fed 100% FO, 25% RO, 50% RO and 50% OO prior to wash-out, followed by 1788 day degrees of 100% FO diet, can be considered beneficial for human health promotion.
Keywords: Atlantic salmon; Muscle; Astaxanthin; Fatty acids; Lipid class composition; Washout-period; Rapeseed oil; Capelin oil; Olive oil; VLCn- 3

Amin Ismail, Zamaliah M. Marjan, Chin W. Foong, Total antioxidant activity and phenolic content in selected vegetables, Food Chemistry, Volume 87, Issue 4, October 2004, Pages 581-586, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2004.01.010.
(http://www.sciencedirect.com/science/article/B6T6R-4BS4F4C-1/2/5670fa7d0e00cf016569eef7fa17a7cc)
Abstract:
This study was carried out to determine the total antioxidant activity and phenolic content of selected common vegetables. The effect of thermal treatment on antioxidant activity and phenolic content were also studied. Kale, spinach, cabbage, swamp cabbage and shallots were used in this study. Among all the vegetables (fresh and thermally treated), shallots showed the highest total antioxidant activity followed by spinach, swamp cabbage, cabbage and kale. Spinach had an exceptionally high total phenolic content, followed by swamp cabbage, kale, shallots and cabbage. Except for shallots and cabbage, the antioxidant activities of kale, spinach and swamp cabbage were significantly decreased ($p<0.05$) after thermal treatment. Moreover, this study revealed that a 1-min thermal treatment significantly decreased ($p<0.05$) the total phenolic content of all vegetables studied.
Keywords: Total antioxidant activity; Total phenolic content; Vegetables

Giacomo Dugo, Lara La Pera, Giovanna Loredana La Torre, Daniele Giuffrida, Determination of Cd(II), Cu(II), Pb(II), and Zn(II) content in commercial vegetable oils using derivative potentiometric stripping analysis, Food Chemistry, Volume 87, Issue 4, October 2004, Pages 639-645, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2003.12.035.
(http://www.sciencedirect.com/science/article/B6T6R-4BVPT1R-6/2/122c5ae6d6c8499ddedaa4b7d9215aea)
Abstract:
The purpose of this paper was to determine the content of Cd(II), Pb(II), Cu(II), and Zn(II) in commercial peanuts, sunflower, soy, maize, rice, grape-seed and hazelnut oils, using derivative potentiometric stripping analysis (dPSA). Previous reports provided evidence that hydrochloric acid extraction followed by dPSA was well suited for trace metals determination in oils: precision lower than 2.1% (expressed as relative standard deviation of the measurements) and detection limits ranging from 0.4 to 0.9 [mu]g kg-1 were obtained for Cd(II), Cu(II), Pb(II), and Zn(II) in the studied vegetable oils. The optimised method was verified with analysing certified reference materials and the obtained accuracy ranged from 93.5% to 97.0%. The results obtained from analysis of commercial vegetable oils showed that the mean levels of cadmium were lower than

4.90 [mu]g kg-1, the average content of lead ranged from 8.60 to 55.61 [mu]g kg-1, the mean content of copper from 53.80 to 674.45 [mu]g kg-1, and zinc from 51.45 to 555.61 [mu]g kg-1.
Keywords: Cadmium; Copper; Derivative potentiometric stripping analysis; Lead; Vegetable oils; Zinc

Ole Hels, Torben Larsen, Lars P. Christensen, Ulla Kidmose, Nazmul Hassan, Shakuntala Haraksingh Thilsted, Contents of iron, calcium, zinc and [beta]-carotene in commonly consumed vegetables in Bangladesh, Journal of Food Composition and Analysis, Volume 17, Issue 5, October 2004, Pages 587-595, ISSN 0889-1575, DOI: 10.1016/j.jfca.2003.08.007.
(http://www.sciencedirect.com/science/article/B6WJH-4BN0GGW-1/2/b4891b0a4195d28e64b7e20b25b4579f)
Abstract:
Iron, calcium and zinc contents of 15 commonly consumed Bangladeshi vegetables were analysed. Analysis of [beta]-carotene was carried out on 7 vegetables and analyses of vitamin C and water-soluble oxalate were carried out on 2 and 4 vegetables, respectively. Samples were purchased at two different times in 2 districts, and 2 markets in each district. The samples were chopped, peeled, washed and prepared ready for cooking according to local practices by local women and the non-edible portions discarded. Statistical evaluation of the results was done using mixed model analysis of variance. The values found for iron and [beta]-carotene contents were lower compared to those in the Bangladeshi food composition tables, while the values for calcium content were either lower or higher. The differences found emphasize the need of updated Bangladeshi food composition tables. The use of the results from this study to produce updated food composition tables is a step towards making estimates of nutrient intakes and adequacies from food consumption surveys more reliable and accurate.
Keywords: Iron; Calcium; Zinc; Oxalate; [beta]-carotene; Vegetable composition; Bangladesh

Dong-Ho Kim, Hyun-Pa Song, Hong-Sun Yook, Yung-Gi Ryu, Myung-Woo Byun, Isolation of enteric pathogens in the fermentation process of Kimchi (Korean fermented vegetables) and its radicidation by gamma irradiation, Food Control, Volume 15, Issue 6, September 2004, Pages 441-445, ISSN 0956-7135, DOI: 10.1016/S0956-7135(03)00119-1.
(http://www.sciencedirect.com/science/article/B6T6S-498TWY7-2/2/31b0a61728b2ad03edae7eea9eea4357)
Abstract:
The isolation of enteric bacteria in the fermentation process of Kimchi and its radicidation by gamma irradiation were investigated. Viable cell numbers of enteric bacteria were 104 CFU g-1 at the initiation of the Kimchi fermentation process, gradually reducing during the fermentation period, and not detected after 10 days. The enteric bacteria in the early fermentation period of Kimchi were eliminated by 2-3 kGy of gamma irradiation, but Lactobacillus spp. survived and fermentation was maintained. The D10 values of total enteric group and Latobacillus spp. were about 0.32 and 0.87 kGy, respectively. The three typical enteric bacteria were identified presumptively, as Enterobacter agglomerans, Salmonella typhimurium and Alcaligenes xylosoxydans, and the D10 values were 0.38, 0.54 and 0.47 kGy, respectively.
Keywords: Kimchi; Fermentation; Irradiation; Enteric bactera

Katariina Roininen, Laurence Fillion, David Kilcast, Liisa Lahteenmaki, Exploring difficult textural properties of fruit and vegetables for the elderly in Finland and the United Kingdom, Food Quality and Preference, Volume 15, Issue 6, September 2004, Pages 517-530, ISSN 0950-3293, DOI: 10.1016/j.foodqual.2003.11.003.
(http://www.sciencedirect.com/science/article/B6T6T-4BHCJHD-1/2/d70add5bf3fd3e8afd858d933c1e7ac9)
Abstract:

In the elderly population, one of the restrictive factors in the diet may be that some foods become troublesome-to-eat as muscle strength deteriorates with age. The aim of the study was to explore what characteristics of foods may cause eating difficulties among elderly respondents in Finland and the United Kingdom (UK). Participants (n=77 in Finland and n=76 in the UK) were from two age groups (23-40 and 60+). Troublesome-to-eat and easy-to-eat texture characteristics of 19 fruit and 19 vegetables were elicited using a combination of sorting and laddering interview techniques. Data were analysed separately for the two age groups and the two countries. The attributes that were found to be the most troublesome for both age groups and both countries were the presence of peel or seeds, and hard and fibrous textures. The main consequences of these attributes were a difficulty to bite into, to chew, to swallow, or to prepare. Although, the troublesome texture attributes were perceived almost in the same way in the two age groups, younger respondents were more elaborate than the older age group in describing the difficulties various textures caused them. The British respondents identified more different attributes and troublesome consequences of fruit and vegetable textures than the Finnish respondents. However, the main structures of the hierarchical value maps were very similar.

Kenjiro Tatematsu, Shin-ya Fuma, Tomoya Nagase, Yuko Ichikawa, Yoichi Fujii, Harumi Okuyama, Factors other than phytosterols in some vegetable oils affect the survival of SHRSP rats, Food and Chemical Toxicology, Volume 42, Issue 9, September 2004, Pages 1443-1451, ISSN 0278-6915, DOI: 10.1016/j.fct.2004.04.005.
(http://www.sciencedirect.com/science/article/B6T6P-4CHRWBJ-3/2/769604c6d59b68d0ead5edef62986e83)
Abstract:
Unusual survival-shortening activities of some vegetable oils were