Komoditas : TEH

Record 1
AU: Amelsvoort,-J.M.M.-van.; Hof,-K.H.-van-het.; Mathot,-J.N.J.J.; Mulder,-T.P.J.; Wiersma,-A.; Tijburg,-L.B.M.
TI: Plasma concentrations of individual tea catechins after a single oral dose in humans.
SO: Xenobiotica. London : Taylor & Francis, 1971-. Dec 2001. v. 31 (12) p. 891-901.

Record 2
AU: Zhu,-B.T.; Patel,-U.K.; Cai,-M.X.; Lee,-A.J.; Conney,-A.H.
TI: Rapid conversion of tea catechins to monomethylated products by rat liver cytosolic catechol-O-methyltransferase.
SO: Xenobiotica. London : Taylor & Francis, 1971-. Dec 2001. v. 31 (12) p. 879-890.

Record 3
AU: Dangour,-A.D.; Hill,-H.L.; Ismail,-S.J.
TI: Haemoglobin status of adult non-pregnant Kazakh women living in Kzyl-Orda region, Kazakhstan.
SO: Eur-j-clin-nutr. Basingstoke : Stockton Press. Dec 2001. v. 55 (12) p. 1068-1075.
AB: Objective: To estimate the prevalence of anaemia among adult non-pregnant women in the Kzyl-Orda region of Kazakhstan, and to determine the association between haemoglobin concentration and anthropometric, socio-economic, reproductive and dietary factors. Design: A cross-sectional study using a randomly selected sample. Subjects were interviewed, and finger-prick blood samples and anthropometric measurements were collected. Associations between haemoglobin concentration and anthropometric and questionnaire data were evaluated by sequential linear regression analysis. Setting: Health centres in Kazalinsk, Djalagash and Zhanakorgan districts of Kzyl-Orda region, Kazakhstan. Subjects: Three-thousand six-hundred and twenty-five non-pregnant women aged 18-45 y randomly selected from health centre records. Results: Iron deficiency anaemia, as reflected by low haemoglobin levels (Hb < 12 g/dl), was detected in 40.2% of the total sample. There was a significant curvilinear relationship between haemoglobin concentration and age, with the nadir of the curve in the 30-40 y age-group. Haemoglobin concentration was found to be positively associated with body mass index (BMI) and socioeconomic factors. Significant negative associations were found between haemoglobin concentration and duration of menses, use of the intra-uterine contraceptive device and the consumption of tea. Conclusions: This study demonstrates that iron deficiency anaemia is present at considerable levels among adult women living in Kzyl-Orda region, Kazakhstan, and provides important baseline information for future research and public health interventions.

Record 4
AU: Marimuthu,-S.; Raj-Kumar,-R.
TI: Physiological and biochemical responses of micropropagated tea plants.
SO: In-vitro-cell-dev-biol,-Plant. Largo, MD : Society for In Vitro Biology. Sept/Oct 2001. v. 37 (5) p. 618-621.

Record 5
AU: Prince,-L.M.; Parks,-C.R.
TI: Phylogenetic relationships of Theaceae inferred from chloroplast DNA sequence data.
SO: Am-j-bot. Columbus, Ohio : Botanical Society of America Inc. Dec 2001. v. 88 (12) p. 2309-2320.
AB: Tribal and generic relationships within Theaceae were investigated using cladistic analyses of chloroplast-encoded rbcL and matK + flanking intergenic spacer region data. Molecular data were employed because recent morphological

and anatomical studies of tea (Camellia sinensis) and related plant species provide conflicting support for tribal and generic relationships within the family. Parsimony analyses of separate and combined data consistently identify three strongly supported lineages: Theeae, Stewartieae, and Gordonieae. These data support the broad generic circumscription of Camellia and Stewartia but do not support the recognition of Gordonia sensu lato. Gordonia lasianthus and Gordonia brandegeei are the basal clade in Gordonieae, a position far removed from all other representatives of Gordonia sensu lato (Polyspora and Laplacea) included in this study. This phylogeny most closely mirrors Airy-Shaw's tribe Camellieae [= Theeae] and his two subtribes Stewartiinae and Gordoniinae, first published in 1936. We recognize all three major lineages at the tribal level, although there is weak statistical support for a sister relationship between Gordonieae and Theeae. We also find statistical support for the recognition of the two former subfamilies Theoideae and Ternstroemioideae as two separate families, Theaceae and Ternstroemiaceae.

Record 6
AU: Morimoto,-S.; Nakai,-M.; Ono,-A.; Kunimi,-Y.
TI: Late male-killing phenomenon found in a Japanese population of the oriental tea tortrix, Homona magnanima (Lepidoptera: Tortricidae).
SO: Heredity. Oxford : Blackwell Science Ltd. Oct 2001. v. 87 (pt.4) p. 435-440.
AB: A female-biased sex ratio was found in the oriental tea tortrix, Homona magnanima (Lepidoptera: Tortricidae), in Tsukuba, Ibaraki, Japan. There was no difference in mean egg hatch between the all-female and normal strains. Greater than 50% mortality was observed in the all-female strain larvae, suggesting that female-only broods are produced as a result of late male-killing. The female-biased sex ratio was maternally inherited and maintained, even when females were backcrossed with males of the normal strain, thus implicating cytoplasmic parasitism as its cause. The phenomenon was persistent in the presence of antibiotics, and was not due to infection by agents that cause other male-killing phenomena, such as Rickettsia, Wolbachia, Spiroplasma, or protozoan parasites. When a homogenate of dead male larvae of the all-female strain was inoculated in normal-strain larvae, this male-killing trait was transmitted to the next generation; thus, its causative agent is probably transmitted horizontally as well.

Record 7
AU: Ryan,-T.; Wilkinson,-J.M.; Cavanagh,-H.M.A.
TI: Antibacterial activity of raspberry cordial in vitro.
SO: Res-vet-sci. London, U.K. : W.B. Saunders Company Ltd. Dec 2001. v. 71 (3) p. 155-159.
AB: Raspberry juice cordial has a long anecdotal use in Australia for the prophylaxis and treatment of gastroenteritis in livestock, cage birds and humans. The antimicrobial properties of raspberry juice cordial, raspberry juice, raspberry leaf extract and a commercial brand of raspberry leaf tea were investigated against five human pathogenic bacteria and two fungi. Raspberry cordial and juice were found to significantly reduce the growth of several species of bacteria, including Salmonella, Shigella and E. coli, but demonstrated no antifungal activity. No antimicrobial activity was detected in the leaf extract or tea.

Record 8
AU: Vanek,-T.; Nepovim,-A.; Valicek,-P.
TI: Determination of stevioside in plant material and fruit teas.
SO: J-food-compos-anal. Orlando, Fla. : Academic Press. Aug 2001. v. 14 (4) p. 383-388.
AB: Stevioside, a diterpene glucoside from Stevia rebaudiana, belongs to the strongest natural sweeteners. Its potential widespread use requires an easy and accurate analytical method. A simple method for stevioside analysis based on the water extraction, hydrophobic chromatography (Sep-Pak C18 cartridges) and HPLC

using linear gradient of acetonitrile in water is described. The feasibility of this procedure was tested analyzing the stevioside level in Stevia leaves as well as in tea "Fruit tea with Stevia". Stevioside content did not show statistically significant difference when a set of 20 tea bags randomly chosen from five boxes was determined (P < 0.01). The mean value of stevioside content in fruit tea with Stevia was 8.14 +/- 2.71 mg/mL. The described method proved to be fast and friendly to the environment by minimization of organic solvent consumption.

Record 9
AU: O'Reilly,-J.D.; Mallet,-A.I.; McAnlis,-G.T.; Young,-I.S.; Halliwell,-B.; Sanders,-T.A.B.; Wiseman,-H.
TI: Consumption of flavonoids in onions and black tea: lack of effect on F2-isoprostanes and autoantibodies to oxidized LDL in healthy humans.
SO: Am-j-clin-nutr. Bethesda, Md. : American Society for Clinical Nutrition. June 2001. v. 73 (6) p. 1040-1044.
AB: Background: Oxidative damage to lipids in vivo may be involved in the development of atherosclerosis and cancer. Onions and black tea are foods rich in flavonoids, predominantly the flavonoid quercetin, which is a potent in vitro inhibitor of membrane lipid peroxidation and LDL oxidation. Objective: Our objective was to investigate the effects of consuming a high-flavonoid (HF) diet enriched with onions and black tea on indexes of oxidative damage in vivo compared with a low-flavonoid (LF) diet. Design: Thirty-two healthy humans were studied in a randomized crossover design. Indexes of oxidative damage used were plasma F2-isoprostanes (a biomarker of lipid peroxidation in vivo) and the titer of antibodies to malondialdehyde (MDA)-modified LDL. Results: There were no significant differences in the intake of macronutrients or assessed micronutrients, plasma F2-isoprostane concentrations, and MDA-LDL autoantibody titer between the HF and LF dietary treatments. In the men, however, plasma concentrations of the F2-isoprostane 8-epi-prostaglandin F(2alpha) were slightly higher after the HF treatment phase than after the LF treatment [0.31 +/- 0.029 nmol/L (111 +/- 10.4 ng/L) compared with 0.26 +/- 0.022 nmol/L (92 +/- 7.8 ng/L); P = 0.041]. In all subjects, plasma quercetin concentrations were significantly higher after the HF treatment phase than after the LF treatment: 221.6 +/- 37.4 nmol/L compared with less than the limit of detection of 66.2 nmol/L. Conclusion: Flavonoid consumption in onions and tea had no significant effect on plasma F2-isoprostane concentrations and MDA-LDL autoantibody titer in this study and thus does not seem to inhibit lipid peroxidation in humans.

Record 10
AU: Sun,-T.; Ho,-C.T.
TI: Antiradical efficiency of tea components.
SO: J-food-lipids. Trumbull, CT : Food & Nutrition Press, 1993-. Sept 2001. v. 8 (3) p. 231-238.

Record 11
AU: Record,-I.R.; Lane,-J.M.
TI: Simulated intestinal digestion of green and black teas.
SO: Food-chem. Oxford : Elsevier Science Limited. June 2001. v. 73 (4) p. 481-486.
AB: Previous studies have shown that significant changes to green tea catechins occur as a result of changes in pH similar to those found in the gastrointestinal tract. In this study we have demonstrated that the sum of the antioxidant activities attributable to the four major catechins in brewed green and black tea samples was less than the total measured antioxidant activity, although there was a high degree of correlation between antioxidant activity and total measured polyphenol concentration. In addition, incubation of either form of tea at acid pH (as found in the stomach) had little effect of the concentration of individual catechins. However, incubation at slightly alkaline pH, similar to that found in the small intestine, resulted in a rapid decline in

the concentrations of both green and black tea catechins, but with a lesser reduction in antioxidant activity and polyphenol concentration.

Record 12
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jaclewt'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Nov 27, 2001. (12,220) 2 p.
AB: A hybrid tea rose plant having vigorous, upright growth and attractive lavender flowers on long stems having a strong, damask fragrance.

Record 13
TI: Tufts Nutrition Research: from the lab to your plate.
SO: Tufts-Univ-health-nutr-lett. New York, NY : Tufts University Health & Nutrition Letter, c1997-. Feb 2001. v. 18 (12) 4 p.

Record 14
AU: Bursill,-C.; Roach,-P.D.; Bottema,-C.D.K.; Pal,-S.
TI: Green tea upregulates the low-density lipoprotein receptor through the sterol-regulated element binding protein in HepG2 liver cells.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Nov 2001. v. 49 (11) p. 5639-5645.
AB: Green tea from Camellia sinensis lowers plasma cholesterol in animal models of hypercholesterolemia. The aim of this study was to determine the effects of green tea on the expression of the hepatic low-density lipoprotein (LDL) receptor, a cell surface protein involved in the control of plasma cholesterol. Incubating human HepG2 liver cells in culture with green tea increased both LDL receptor binding activity and protein. An ethyl acetate extract of green tea, containing 70% (w/w) catechins, also increased the LDL receptor binding activity, protein, and mRNA, indicating that (1) the effect was at the level of gene transcription and that (2) the catechins were the active constituents. The mechanism by which green tea up-regulated the LDL receptor was then investigated. Green tea decreased the cell cholesterol concentration (-30%) and increased the conversion of the sterol-regulated element binding protein (SREBP-1) from the inactive precursor form to the active transcription-factor form. Consistent with this, the mRNA of 3-hydroxy-3-methylglutaryl coenzyme A reductase, the rate-limiting enzyme in cholesterol synthesis, was also increased by green tea. In conclusion, green tea up-regulated the LDL receptor in HepG2 cells. The effect was most likely mediated through SREBP-1 in response to a decrease in the intracellular cholesterol concentration. The LDL receptor may therefore play a role in the hypocholesterolemic effect of green tea in vivo.

Record 15
AU: Jaggi,-S.; Sood,-C.; Kumar,-V.; Ravindranath,-S.D.; Shanker,-A.
TI: Leaching of pesticides in tea brew.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Nov 2001. v. 49 (11) p. 5479-5483.
AB: A cup of tea that cheers can also be an important route of human exposure to pesticide residues. It is important to evaluate the percent transfer of pesticide residue from dried (made) tea to tea infusion, as tea is subjected to an infusion process prior to human consumption. To investigate the pesticide translocation, 13 pesticides commonly used on tea were studied by subjection of fortified teas to infusion. Analytes of interest were quantified by gas-liquid chromatography with nitrogen-phosphorus and electron capture detectors. Interestingly, water solubility of pesticides did not necessarily indicate a shift of residues toward their preferential accumulation in infusion. The pesticides with larger partition coefficient (K(ow)) values remained nonextractable in infusing water. Further, boiling for longer periods (extended brewing time) resulted in higher transfer of pesticides to tea brew.

Record 16

AU: Wang,-D.; Kubota,-K.; Kobayashi,-A.; Juan,-I.M.
TI: Analysis of glycosidically bound aroma precursors in tea leaves. 3. Change in the glycoside content of tea leaves during the oolong tea manufacturing process.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Nov 2001. v. 49 (11) p. 5391-5396.
AB: A direct qualitative and quantitative determination of the glycosides of tea aroma compounds at the four stages of the oolong tea manufacturing process (plucking, solar withering, indoor withering, and oolong tea product) was carried out by a capillary gas chromatographic-mass spectrometric analysis after trifluoroacetyl derivatization of the glycosidic fractions. Sixteen glucosides and primeverosides were identified and quantified in cv. Chin-shin-oolong and cv. Chinhsuan-oolong. A comparison of the glycosides in dried fresh leaves between the two cultivars showed significant differences. During the manufacturing process, the amounts of most of these glycosides increased from the solar-withering stage, reaching the highest level at the final stage of oolong tea production. It was noted that no glycoside decreased in its content during the manufacturing process, this being quite different from the manufacture of black tea. In addition, the contents of these alcoholic aroma compounds in the free aroma concentrate from each cultivar remained almost unchanged or slightly decreased, and they constituted only about 12 and 17% in amount of the whole oolong tea aroma compounds. However, jasmine lactone and indole were markedly higher in the final oolong tea products.

Record 17
AU: Astill,-C.; Birch,-M.R.; Dacombe,-C.; Humphrey,-P.G.; Martin,-P.T.
TI: Factors affecting the caffeine and polyphenol contents of black and green tea infusions.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Nov 2001. v. 49 (11) p. 5340-5347.
AB: The effects of product and preparation variables on the in-cup chemical composition of tea extracts is of interest because the appearance and taste characteristics and the possible health effects of a tea liquor arise from the chemical components extracted from the leaf during tea preparation. A comprehensive study was therefore undertaken to determine the contributions of product and preparation variables on the total soluble solids, caffeine, and polyphenol contents of tea extracts. The results of this study show that the variety, growing environment, manufacturing conditions, and grade (particle size) of the tea leaves each influence the tea leaf and final infusion compositions. In addition, the composition of the tea infusion was shown to be influenced by whether the tea was contained in a teabag and, if so, the size and material of construction of the bag. Finally, the preparation method, including the amounts of tea and water used, infusion time, and amount of agitation, was shown to be a major determinant of the component concentrations of tea beverages as consumed. An illustration of the variation introduced by these product and preparation factors is provided by comparing solids, caffeine, and polyphenol contents of green and black tea infusions when commercial products are prepared according to the instructions given on their packaging.

Record 18
AU: Tzouros,-N.E.; Arvanitoyannis,-I.S.
TI: Agricultural produces: synopsis of employed quality control methods for the authentication of foods and application of chemometrics for the classification of foods according to their variety or geographical origin.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (4) p. 287-319.
AB: A review of quality control methods and applications of multivariate statistical techniques on the authentication and classification of agricultural products is presented. The products reported within the frame of this article were vegetables, fruits, juices, jams, wines, cereals, bakery products, oils, tea, coffee, honey, sugar-syrups, salad dressings, and gums. The perspective of

multivariate statistics as a promising tool to authenticate and classify these food products according to their geographical origin or variety was demonstrated. Several representative figures and informative synoptical tables for agricultural food products were provided both for the quality control methods employed and the multivariate analyses implemented.

Record 19
AU: Tucker,-R.T.
TI: Miniature rose plant named 'Tuckamy'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Dec 11, 2001. (12,270) 2 p.
AB: This invention relates to a new and distinct variety of miniature rose plant primarily identified by its light pink buds and flowers, hybrid tea form and glossy dark green foliage.

Record 20
AU: Olesen,-L.P.; Olesen,-M.N.
TI: Hybrid tea rose variety 'Poulen002'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Dec 11, 2001. (12,268) 3 p.
AB: A new hybrid tea rose plant which has abundant, large, fragrant amber-yellow flowers and attractive foliage. This new and distinct variety has shown to be uniform and stable in the resulting generations from asexual propagation.

Record 21
AU: Spidel,-M.
TI: Is there a link between tea consumption and cardiovascular disease.
SO: Can-home-econ-j. Ottawa : Canadian Home Economics Association,. 2001. v. 51 (1) p. 44-47.
AB: Researchers are investigating tea for potential health benefits, specifically regarding cardiovascular disease. Tea contains antioxidants, including flavonoids, that may be involved in inhibiting the oxidative modification of LDL, therefore reducing the risk of atherogenesis. In vitro and in vivo evidence support this idea. Although there may be evidence to show the inhibition of LDL to oxidation, unfortunately, there is not enough evidence to understand the absorption or metabolism of tea antioxidants. We also need to consider what impact drinking tea on a daily basis would have on the total diet. More conclusive evidence is needed before any recommendations can be made to include tea as part of a healthy diet.

Record 22
AU: Scolari,-G.; Zacconi,-C.; Vescovo,-M.
TI: Microbial contamination of tea and aromatic herb-tea products.
SO: Ital-j-food-sci. Pinerolo, Italy : Chiriotti Editori, 1989-. 2001. v. 13 (4) p. 429-433.

Record 23
AU: Mondal,-T.K.; Bhattacharya,-A.; Ahuja,-P.S.; Chand,-P.K.
TI: Transgenic tea [Camellia sinensis (L.) O. Kuntze cv. Kangra Jat] plants obtained by Agrobacterium-mediated transformation of somatic embryos.
SO: Plant-cell-rep. Berlin : Springer-Verlag. Dec 2001. v. 20 (8) p. 712-720.
AB: A protocol for the production of transgenic tea [Camellia sinensis (L.) O. Kuntze cv. Kangra Jat] was developed via Agrobacterium-mediated genetic transformation of somatic embryos. Two disarmed Agrobacterium tumefaciens strains, EHA 105 and LBA 4404, both carrying the binary plasmid p35SGUSINT with the nptII gene and gus-intron were evaluated as vector systems. A number of parameters were tested with respect to maximizing transformation efficiency. While pre-culture, wounding and acetosyringone treatment were inhibitory, the bacterial growth phase (optical density; OD600 = 0.6), cell density (10(9)/ml), co-cultivation period (5 days) and pH of the co-cultivation medium (5.6) had positive effects on transformation. Following co-cultivation, globular somatic

embryos were placed on multiplication medium and stressed with kanamycin (50 microgram/ml). Further selection occurred in the maturation and germination medium at an elevated kanamycin level (75 microgram/ml). An average of 40% transient expression was evident based on the GUS histochemical assay. Kanamycin-resistant, GUS-positive embryos were germinated, and the resulting microshoots were multiplied in vitro. Integration of the transgenes into the tea nuclear genome was confirmed by PCR analysis using nptII- and gus-specific primers and by Southern hybridization using an nptII-specific probe. The transgenic shoots were micrografted onto seed-grown rootstocks of cv. Kangra Jat and eventually hardened in a walk-in polyhouse. This is the first report on the production of transgenic tea.

Record 24
AU: O'Brien,-S.M.; Bennett,-C.L.
TI: Miniature rose plant named 'Ultimate Pleasure'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Oct 30, 2001. (12,179) 2 p.
AB: The subject of the present disclosure is a new and distinct variety of miniature rose plant, named 'Ultimate Pleasure' which is characterized by buds and blooms in shades of light pink with a medium pink reverse. Blooms of this rose are borne one to a stem and in sprays of 5 to 7 or more with hybrid tea form. The bush is vigorous, well-branched and produces moderate to heavy blooms.

Record 25
AU: Liang,-Y.; Xu,-Y.
TI: Effect of pH on cream particle formation and solids extraction yield of black tea.
SO: Food-chem. Oxford : Elsevier Science Limited. Aug 2001. v. 74 (2) p. 155-160.
AB: Effect of pH on tea solids extraction yield was significant in increasing instant tea yield. Solids extraction yield was doubled when tea was extracted at pH 1.2 compared with that extracted in boiling distilled water with pH 6.8. H(+) encouraged black tea cream particle formation by either releasing more solids into the infusion or stimulating polyphenols to interact with polysaccharides and nucleophilic groups on protein in tea infusions. HPLC results revealed that theaflavins and tea catechins were leading substances affecting the formation of cream particles and infusion colour. Theaflavins and some tea catechins, such as EGCG, ECG and EGC, were dissociated or degraded under alkaline conditions and thus tea cream particles tended to dissolve and tea infusion became dark in colour. Feasibility of stepwise extraction of instant teas used for iced tea and normal drinking tea, by controlling temperature and pH, is also considered in the present paper.

Record 26
AU: Okai,-Y.; Higashi-Okai,-K.
TI: Protective effects of chlorophyll a and pheophytin a derived from green tea (Camellia sinensis) on p-nonylphenol-induced cell growth inhibition and oxygen radical generation in yeast (Saccharomyces cerevisiae).
SO: J-sci-food-agric. West Sussex : John Wiley & Sons Limited. Dec 2001. v. 81 (15) p. 1443-1446.
AB: We recently reported that the endocrine disruptor p-nonylphenol (NP) caused suppressive effects on cell growth and cellular respiration in the yeast Saccharomyces cerevisiae and that these effects were associated with NP-induced oxygen radical generation (Okai Y et al, FEMS Microbiol Lett 185:65-70 (2000)). In the present study we found preventive effects of photosynthetic pigments chlorophyll a and pheophytin a from green tea (Camellia sinensis) on NP-induced inhibition of cell growth and cellular respiration in yeast. Their preventive activities were much higher than those of a synthetic sodium-copper salt form of chlorophyll, chlorophyllin. These pigments also prevented NP-induced oxygen radical generation in yeast cells, showing suppressive activities proportional to their preventive activities against inhibition of cell growth and cellular

respiration. The significance of this finding is discussed from the viewpoint of protective activity of photosynthetic pigments against endocrine disruptor-induced harmful effects.

Record 27
AU: Kong,-Y.T.; Imabayashi,-S.; Kano,-K.; Ikeda,-T.; Kakiuchi,-T.
TI: Peroxidase-based amperometric sensor for the determination of total phenols using two-stage peroxidase reactions.
SO: Am-j-enol-vitic. Davis, Calif. : American Society for Enology and Viticulture. 2001. v. 52 (4) p. 381-385.

Record 28
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacpinap'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Nov 13, 2001. (12,202) 2 p.
AB: Abstract: A hybrid tea rose plant having long stems bearing high centered fragrant flowers; dark green, glossy foliage; vigorous upright growth and resistance to mildew and rust.

Record 29
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacladin'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Nov 13, 2001. (12,200) 2 p.
AB: A hybrid tea rose plant having bright red flowers with heavy petal substance on long stems; vigorous, upright growth; and glossy, disease resistant foliage.

Record 30
AU: Hoy,-L.L.-Jr.
TI: Hybrid tea rose plant named 'HILMOC'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Nov 13, 2001. (12,199) 2 p.
AB: Abstract: Described is a hybrid tea rose plant variety producing red flowers of good form.

Record 31
AU: He,-P.; Noda,-Y.; Sugiyama,-K.
TI: Green tea suppresses lipopolysaccharide-induced liver injury in D-galactosamine-sensitized rats.
SO: J-nutr. Bethesda : American Society for Nutritional Sciences. May 2001. v. 131 (5) p. 1560-1567.
AB: We conducted a series of in vivo experiments to clarify the hepatoprotective activity of green tea against lipopolysaccharide (LPS) + D-galactosamine (GalN)-induced liver injury and to elucidate the mechanism by which green tea exerts its effect in 7-wk-old male Wistar rats. Liver injury was assessed by plasma alanine aminotransferase and aspartate aminotransferase activities. Green tea extract significantly suppressed LPS + GalN-induced liver injury when added to the diet (30 or 35 g/kg) and fed to rats for 14 d or when force-fed alone (0.4-1.2 g/kg body) 1.5 h before the injection of drugs. Although all five of the fractions extracted from green tea extract with different organic solvents had significant suppressive effects, the caffeine-containing fraction exhibited the strongest effect, suggesting that the protective effect of green tea against LPS + GalN-induced liver injury is attributable mainly to caffeine. Authentic caffeine also significantly suppressed LPS + GalN-induced liver injury when added to the diet (2 g/kg) and fed to rats for 14 d. Dietary green tea suppressed LPS + GalN-induced apoptosis of liver cells, as assessed by DNA fragmentation. However, dietary green tea did not suppress LPS-induced enhancement of plasma concentration of tumor necrosis factor (TNF)-alpha, the cytokine that is thought to play a pivotal role in the

pathogenesis of LPS-induced liver injury, although it significantly suppressed plasma concentrations of interleukin (IL)-1beta, IL-2, IL-4, IL-6, IL-10 and interferon (IFN)-gamma TNF-alpha + GalN-induced liver injury and apoptosis were also suppressed by dietary green tea. In contrast, dietary caffeine significantly suppressed.

LPS-induced enhancement not only of plasma IL-1beta, IL-6, IL-10 and IFN-gamma concentrations, but also of TNF-alpha concentration. The results suggest that green tea might suppress LPS + GalN-induced liver injury mainly through the inhibition of TNF-alpha-induced apoptosis of hepatocytes, rather than through the suppression of TNF-alpha production, although the suppressed production of TNF-alpha may be associated with the hepatoprotective effect of caffeine.

Record 32
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacsilho'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Oct 9, 2001. (12,127) 2 p.
AB: Abstract: A hybrid tea rose plant with free flowering, pinkish flowers having a high centered bud and open flower form on long stems; strong fragrance; and vigorous, upright, well-branched growth.

Record 33
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacyelap'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Oct 9, 2001. (12,126) 2 p.
AB: Abstract: A hybrid tea rose plant having vigorous, upright, well-branched growth; strong, healthy, dark green foliage; long cutting stems; and large, well-formed yellow-orange flowers.

Record 34
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacmega'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Oct 2, 2001. (12,120) 2 p.
AB: Abstract: A hybrid tea rose plant having bright yellow flowers on long stems; dark green, glossy foliage; resistance to rust and mildew; and vigorous, upright growth.

Record 35
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacolfa'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Oct 2, 2001. (12,118) 2 p.
AB: Abstract: A hybrid tea rose plant having vigorous, upright growth; large, soft pink flowers of old fashioned form and strong, sweet fragrance; dark green, glossy foliage and resistance to rust and mildew.

Record 36
AU: Tang,-S.; Kerry,-J.P.; Sheehan,-D.; Buckley,-D.J.
TI: A comparative study of tea catechins and alpha-tocopherol as antioxidants in cooked beef and chicken meat.
SO: Eur-food-res-technol. Berlin : Springer, c1999-. Oct 2001. v. 213 (4/5) p. 286-289.

Record 37
AU: McGready,-R.; Simpson,-J.A.; Cho,-T.; Dubowitz,-L.; Changbumrung,-S.; Bohm,-V.; Munger,-R.G.; Sauberlich,-H.E.; White,-N.J.; Nosten,-F.
TI: Postpartum thiamine deficiency in a Karen displaced population.
SO: Am-j-clin-nutr. Bethesda, Md. : American Society for Clinical Nutrition. Dec 2001. v. 74 (6) p. 808-813.

AB: Background: Before its recognition, infantile beriberi was the leading cause of infant death in camps for displaced persons of the Karen ethnic minority on Thailand's western border. Objective: This study aimed to document thiamine status in the peripartum period to examine the current supplementation program and the correlation between the clinical manifestations of thiamine deficiency and a biochemical measure of thiamine status. Design: Women were enrolled prospectively at 30 wk of gestation and were followed up weekly until delivery and at 3 mo postpartum. Thiamine supplementation during pregnancy was based on patient symptoms. Results: At 3 mo postpartum, thiamine deficiency reflected by an erythrocyte transketolase activity (ETKA) greater than or equal to 1.20% was found in 57.7% (15/26) of mothers, 26.9% (7/26) of whom had severe deficiency (ETKA > 1.25%). No significant associations between ETKA and putative maternal symptoms or use of thiamine supplements were found. Conclusions: Biochemical postpartum thiamine deficiency is still common in Karen refugee women. This situation may be improved by educating lactating women to reduce their consumption of thiaminase-containing foods and by implementing an effective thiamine supplementation program.

Record 38
AU: Gross,-M.
TI: The current status of markers of oxidative damage.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 409-411.

Record 39
AU: Rice-Evans,-C.
TI: Methods to quantify antioxidant activity of tea/tea extracts in vitro.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 405-407.

Record 40
AU: Hollman,-P.C.H.
TI: Methods to quantify tea components in biological matrices.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 402-404.

Record 41
AU: Wan,-X.
TI: Methods to quantitatively measure active components in tea/tea extracts.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 400-401.

Record 42
AU: Engelhardt,-U.
TI: Flavonoids--analysis.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 398-399.

Record 43
AU: Clifford,-M.
TI: A nomenclature for phenols with special reference to tea.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 393-397.

Record 44
AU: Wiseman,-S.; Waterhouse,-A.; Korver,-O.
TI: The health effects of tea and tea components: opportunities for standardizing research methods.
SO: Crit-rev-food-sci-nutr. Boca Raton, Fla. : CRC Press, c1980-. 2001. v. 41 (5) p. 387-392.

Record 45
AU: Scott,-P.M.
TI: Analysis of agricultural commodities and foods for Alternaria mycotoxins.
SO: J-AOAC-Int. Gaithersburg, MD : AOAC International. Nov/Dec 2001. v. 84 (6) p. 1809-1817.
AB: Fungi of the genus Alternaria are parasitic on plants and other organic materials. A. alternata is a frequently occurring species of particular interest because it produces a number of mycotoxins, including alternariol (AOH), alternariol monomethyl ether (AME), altenuene (ALT), altertoxins I, II, and III (ATX-I, -II, and -III), and L-tenuazonic acid (TeA). Cleanup procedures of analytical methods for foods and foodstuffs include solvent partition, generally used for TeA, and solid-phase extraction columns for AOH, AME, and ATX-I. These Alternaria mycotoxins have been determined by TLC, GC, and more usually LC, mainly with ultraviolet detection, although fluorescence and electrochemical detection have also been used for Alternaria toxins other than TeA. A Zn(2+) salt is usually added to the LC mobile phase for TeA. Recently, atmospheric pressure chemical ionization and electrospray LC/MS and LC-MS/MS have been applied to the determination and confirmation of AOH and AME in apple juice and other fruit beverages at sub ng/mL levels. Natural occurrences of AOH, AME, and in some cases other Alternaria toxins have been reported in various fruits, including tomatoes, olives, mandarins, melons, peppers, apples, and raspberries. They have been found also in processed fruit products such as apple juice, other fruit beverages and tomato products, wheat and other grains, sunflower seeds, oilseed rape meal, and pecans.

Record 46
AU: Paganetto,-A.; Carpaneto,-A.; Gambale,-F.
TI: Ion transport and metal sensitivity of vacuolar channels from the roots of the aquatic plant Eichhornia crassipes.
SO: Plant-cell-environ. Oxford, U.K. : Blackwell Science Ltd. Dec 2001. v. 24 (12) p. 1329-1336.
AB: Using the patch-clamp technique, we investigated the transport properties of vacuolar ion channels from the roots of water hyacinth, Eichhornia crassipes (Mart. Solms, Pontederiacae). Eichhornia crassipes vacuoles displayed large voltage-dependent rectifying slow-vacuolar (SV) currents, which activated in a few seconds at positive potentials and deactivated at negative voltages in a few hundreds of mill-seconds. Similarly to SV channel previously identified in the tonoplast of terrestrial plants, SV currents in E. crassipes were activated by micromolar concentrations of Ca(2+) and current slightly increased (25%) on addition (10 mM) of the reducing agent dithiothreitol (DTT). Eichhornia crassipes SV channels were equally permeable to K(+) and Na(+). The permeability sequence derived from current values is: K(+) approximately equal to Na(+) > Rb(+) > NH4(+) approximately equal to Cs(+) >> TEA(+). Excised membrane patches displayed single channel transitions typical of SV-type single channel openings with a conductance of (83.0 +/- 5.6) pS; a smaller channel with a conductance of (31.0 +/- 2.7) pS was also identified. Metals such as Ni(2+) and Zn(2+) decreased the vacuolar current in a reversible manner. However, although Zn(2+) inhibition is comparable to that induced by the same metal in vacuoles from the main root of sugar beet (Beta vulgaris L.), the inhibition of the SV currents by Ni(2+) is not as substantial in E. crassipes as in sugar beet. To our knowledge, this is the first electrophysiological characterization of ionic transport in E. crassipes, a pervasive troublesome aquatic weed, which has exceptional absorption properties of several water contaminants such as heavy.
metals, pesticides and phenols.

Record 47
AU: Tanaka,-T.; Inoue,-K.; Betsumiya,-Y.; Mine,-C.; Kouno,-I.
TI: Two types of oxidative dimerization of the black tea polyphenol theaflavin.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Dec 2001. v. 49 (12) p. 5785-5789.

AB: Theaflavin and its galloyl esters are polyphenolic pigments of black tea. In the course of studies on the oxidation mechanism of tea polyphenols, two theaflavin oxidation products named bistheaflavins A and B were isolated, and their structures were elucidated on the basis of MS and NMR spectroscopic analyses. Treatment of a mixture of (-)-epicatechin and (-)-epigallocatechin with banana fruit homogenate yielded bistheaflavin A together with theaflavin and theanaphthoquinone. The symmetrical structure of bistheaflavin A suggested that this compound was formed by oxidative C-C coupling of two theaflavin molecules. In contrast, theaflavin in phosphate buffer (pH 7.3) was gradually oxidized to give bistheaflavin B and theanaphthoquinone. Bistheaflavin B possesses a bicyclooctane skeleton probably formed by intermolecular cyclization between dehydrotheaflavin and dihydrotheanaphthoquinone.

Record 48
AU: Stadler,-R.H.
TI: The use of chemical markers and model studies to assess the in vitro pro- and antioxidative properties of methylxanthine-rich beverages.
SO: Food-rev-int. Monticello, NY : Marcel Dekker, Inc. 2001. v. 17 (4) p. 385-418.

Record 49
AU: Dufresne,-C.J.; Farnworth,-E.R.
TI: A review of latest research findings on the health promotion properties of tea.
SO: J-nutr-biochem. New York, N.Y. : Elsevier Science Inc. July 2001. v. 12 (7) p. 404-421.
AB: Important progress has been made in the past five years concerning the effects of green and black tea on health. Experimentation with new accurate tools provide useful information about the metabolism of tea components in the body, their mode of action as antioxidants at the cellular level and their protective role in the development of cancer, cardiovascular disease and other pathologies. The use of tea components as nutraceuticals and functional foods are also discussed.

Record 50
AU: Kim,-J.I.; Hong,-S.B.; Row,-K.H.
TI: Effect of particle size in preparative reversed-phase high-performance liquid chromatography on the isolation of epigallocatechin gallate from Korean green tea.
SO: J-chromatogr-A. Amsterdam ; New York : Elsevier, 1993-. Mar 8, 2002. v. 949 (1/2) p. 275-280.

Record 51
AU: Wang,-D.; Kurasawa,-E.; Yamaguchi,-Y.; Kubota,-K.; Kobayashi,-A.
TI: Analysis of glycosidically bound aroma precursors in tea leaves. 2. Changes in glycoside contents and glycosidase activities in tea leaves during the black tea manufacturing process.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Apr 2001. v. 49 (4) p. 1900-1903.
AB: Glycosides are known to be precursors of the alcoholic aroma compounds of black tea. They are hydrolyzed by endogenous glycosidases during the manufacturing process. Changes in the amounts of these glycosides during the manufacturing process were investigated by using a capillary gas chromatographic-mass spectrometric analysis after trifluoroacetyl derivatization of the tea glycosidic fractions. Primeverosides were 3-fold more abundant than glucosides in fresh leaves, but they decreased greatly during the manufacturing process, especially during the stage of rolling. After the final stage of fermentation, primeverosides had almost disappeared, whereas glucosides were substantially unchanged. These results show that hydrolysis of the glycosides mainly occurred during the stage of rolling and confirm that primeverosides are the main black tea aroma precursors. This was also supported by the changes in

the glycosidase activities in tea leaves. The glycosidase activities remained at a high level during withering but decreased drastically after rolling.

Record 52
AU: Degenhardt,-A.; Engelhardt,-U.H.; Winterhalter,-P.; Ito,-Y.
TI: Centrifugal precipitation chromatography--a novel chromatographic system for fractionation of polymeric pigments from black tea and red wine.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Apr 2001. v. 49 (4) p. 1730-1736.
AB: A novel chromatographic system was developed and first applied to the fractionation of polymeric pigments from black tea and red wine. Centrifugal precipitation chromatography (CPC) generates solvent gradients through a long separation channel under a centrifugal force field. Tea and wine extracts are precipitated in a hexane- or methyl tert-butyl ether-rich environment and are exposed to a gradually increasing ethanol concentration. This causes a repetitive precipitation and dissolution of the biopolymers along the channel. Consequently, they are eluted in the order of their solubility in the organic solvent. It is shown by HPLC analysis of the separated fractions that monomers elute first, whereas fractionated polymers can be found at the end of the chromatographic run. This novel method allows gentle fractionation of polymeric tea and wine constituents and also has potential for use in preparative-scale separations.

Record 53
AU: Roginsky,-V.; Barsukova,-T.
TI: Chain-breaking antioxidant capability of some beverages as determined by the Clark electrode technique.
SO: J-med-food. Larchmont, NY : Mary Ann Liebert, Inc., c1998-. Winter 2001. v. 4 (4) p. 219-229.

Record 54
AU: Kohri,-T.; Matsumoto,-N.; Yamakawa,-M.; Suzuki,-M.; Nanjo,-F.; Hara,-Y.; Oku,-N.
TI: Metabolic fate of (-)-[4-3H]epigallocatechin gallate in rats after oral administration.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Aug 2001. v. 49 (8) p. 4102-4112.
AB: After oral administration of [4-3H]EGCg to rats, the radioactivity in blood, major tissues, urine, and feces was measured over time. The radioactivity in blood and most tissues remained low for 4 h postdose, began to increase after 8 h, peaked at 24 h, and then decreased. Major urinary excretion of radioactivity occurred in the 8-24 h period, and the cumulative radioactivity excreted by 72 h was 32.1% of the dose. The radioactivity in the feces was 35.2% of the dose within 72 h postdose. In the case of rats pretreated with antibiotics (antibiotic-pretreated rats), the radioactivity levels of the blood and urine were definitely lower than those in rats not pretreated with antibiotics (normal rats). The radioactivity recovered in the antibiotic-pretreated rat urine was estimated to be only 1/100 of that in the normal rat urine. These results clearly demonstrated that the radioactivity detected in the blood and urine of normal rats mostly originated from degradation products of EGCg produced by intestinal bacteria. Furthermore, a main metabolite in the normal rats was purified and identified as 5-(5'-hydroxyphenyl)-gamma-valerolactone 3'-O-beta-glucuronide (M-2). In feces of the normal rats, EGC (40.8% of the fecal radioactivity) and 5-(3',5'-dihydroxyphenyl)-gamma-valerolactone (M-1, 16.8%) were detected. These results suggested that M-1 was absorbed in the body after degradation of EGCg by intestinal bacteria, yielding M-1 with EGC as an intermediate. Furthermore, M-2 was thought to be formed from M-1 in the intestinal mucosa and/or liver, then to enter the systemic circulation, and finally to be excreted in the urine. Taking into account all of the above findings, a possible metabolic route of EGCg.
orally administered to rats is proposed.

Record 55
AU: Rajnarayanan,-R.V.; Rowley,-C.W.; Hopkins,-N.E.; Alworth,-W.L.
TI: Regulation of phenobarbital-mediated induction of CYP102 (cytochrome P450(BM-3)) in Bacillus megaterium by phytochemicals from soy and green tea.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Oct 2001. v. 49 (10) p. 4930-4936.
AB: Cytochrome P450 102 (CYP102 or Cytochrome P450(BM-3)) is induced in Bacillus megaterium by barbiturates, perioxisome proliferators, estrogen, and nonsteroidal antiinflammatory drugs. We have previously demonstrated that a CYP102 construct (BMC 143) coupled with a luciferase reporter gene can be used to identify the inducers of CYP102. We now describe the effect of added phytochemicals on the induction of CYP102 by phenobarbital (PB) in B. megaterium. The isoflavones genistein, biochanin A, coumestrol, and equol, the green tea flavanoid epicatechin, and the fungal toxin zearalenone inhibit the induction of CYP102 by PB in a dose-dependent manner. However, the isoflavone daidzein, the phytoalexin glyceollin, and catechin, an epimer of epicatechin, failed to exhibit a similar inhibitory effect on PB-mediated CYP102 induction.

Record 56
AU: Fernandez-Caceres,-P.L.; Martin,-M.J.; Pablos,-F.; Gonzalez,-A.G.
TI: Differentiation of tea (Camellia sinensis) varieties and their geographical origin according to their metal content.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Oct 2001. v. 49 (10) p. 4775-4779.
AB: The metal content of 46 tea samples, including green, black, and instant teas, was analyzed. Al, Ba, Ca, Cu, Fe, K, Mg, Mn, Na, Sr, Ti, and Zn were determined by ICP-AES. Potassium, with an average content of 15145.4 mg kg(-1) was the metal with major content. Calcium, magnesium, and aluminum had average contents of 4252.4, 1978.2, and 1074.0 mg kg(-1), respectively. The average amount of manganese was 824.8 mg kg(-1). There were no clear differences between the metal contents of green and black teas. Pattern recognition methods such as principal component analysis (PCA), linear discriminant analysis (LDA), and artificial neural networks (ANN), were applied to differentiate the tea types. LDA and ANN provided the best results in the classification of tea varieties. These chemometric procedures were also useful for distinguishing between Asian and African teas and between the geographical origin of different Asian teas.

Record 57
AU: Ou,-B.; Hampsch-Woodill,-M.; Prior,-R.L.
TI: Development and validation of an improved oxygen radical absorbance capacity assay using fluorescein as the fluorescent probe.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Oct 2001. v. 49 (10) p. 4169-4626.
AB: An improved method of oxygen radical absorbance capacity (ORAC) assay has been developed and validated using fluorescein (3',6'-dihydroxyspiro[isobenzofuran-1[3H], 9'[9H]-xanthen]-3-one) as the fluorescent probe. Our results demonstrate that fluorescein (FL) is superior to B-phycoerythrin. The oxidized FL products induced by peroxyl radical were identified by LC/MS, and the reaction mechanism was determined to follow a classic hydrogen atom transfer mechanism. In addition, methodological and mechanistic comparison of ORAC(FL) with other widely used methods was discussed. It is concluded that, unlike other popular methods, the improved ORAC(FL) assay provides a direct measure of hydrophilic chain-breaking antioxidant capacity against peroxyl radical.

Record 58
AU: Fujita,-H.; Yamagami,-T.; Ohshima,-K.
TI: Long-term ingestion of a fermented soybean-derived touchi-extract with alpha-glucosidase inhibitory activity is safe and effective in humans with borderline and mild type-2 diabetes.

SO: J-nutr. Bethesda : American Society for Nutritional Sciences. Aug 2001. v. 131 (8) p. 2105-2108.
AB: Water-extracted Touchi, a traditional Chinese food, exerts a strong inhibitory activity against rat intestinal alpha-glucosidase in foodstuffs, and Touchi-extract (TE) has been shown to have an antihyperglycemic effect in rats and humans after a single oral administration. In the present complementary study, the effects of powdered Houji-tea with or without (placebo) TE, a formula designed to enhance good compliance, were monitored in a 3-mo double-blind randomized group comparison study with placebo controls in humans with borderline and mild type-2 diabetes (n = 36). All subjects ingested Houji-tea with or without 0.3 g of TE before each of three meals per day for 3 mo. In the TE group, initial fasting blood glucose (6.9 +/- 0.1 mmol/L) and glycated hemoglobin (HbA1c; 6.1 +/- 0.1%) levels gradually decreased; fasting blood glucose decreased significantly after 3 mo (6.4 +/- 0.3 mmol/L; $P < 0.05$) as did HbA1c (5.6 +/- 0.2%; $P < 0.01$) levels at 2 mo postingestion of TE and thereafter. In contrast, fasting blood glucose and HbA1c levels did not change in the placebo group. In this study, other biochemical variables were not affected in any of the subjects, and no one complained of any side effects or abdominal distension. Moreover, there was no deterioration as assessed by fasting blood glucose and HbA1c levels after withdrawal of TE ingestion. Thus, the alpha-glucosidase inhibitory TE demonstrated an antihyperglycemic effect and may prove useful for improving glycemic control in subjects suffering from borderline and type-2 diabetes mellitus.

Record 59
AU: Richelle,-M.; Tavazzi,-I.; Offord,-E.
TI: Comparison of the antioxidant activity of commonly consumed polyphenolic beverages (coffee, cocoa, and tea) prepared per cup serving.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. July 2001. v. 49 (7) p. 3438-3442.
AB: In this study, the in vitro low-density lipoprotein oxidation model was used to assess the relative antioxidant activity of the polyphenolic beverages tea, coffee, and cocoa on a cup-serving basis. The beverages were prepared as 0.7-2.5% soluble coffee and 1.5-3.5% cocoa; teas (green, black, or herbal) were prepared as one tea bag infused over 5 min in 220 mL of hot water. Under these standard cup serving conditions, the antioxidant activity as determined by the lag time was in the range of 292-948 min for coffee, 217-444 min for cocoa, 186-338 min for green tea, 67-277 min for black tea, and 6-78 min for herbal tea. Addition of milk did not alter the antioxidant activity. The influence of coffee bean source and degree of roasting was further investigated. Green coffee beans of Robusta coffee exhibited a 2-fold higher antioxidant activity than Arabica coffee, but after roasting this difference was no longer significant. In conclusion, these commonly consumed beverages have a significant antioxidant activity, the highest being soluble coffee on a cup-serving basis.

Record 60
AU: Kumazawa,-K.; Masuda,-H.
TI: Change in the flavor of black tea drink during heat processing.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. July 2001. v. 49 (7) p. 3304-3309.
AB: Heat processing during canning is responsible for the change in flavor of black tea infusion. The quantitative change in the volatile components of the black tea infusion during heat processing is not sufficient for explaining the sensory evaluation. In this study, application of aroma extract dilution analysis using the volatile fraction before and after black tea (Darjeeling) samples were heat processed resulted in the detection of 10 odor-active peaks for which flavor dilution (FD) factors changed. Seven potent odorants were identified from these peaks by gas chromatography-mass spectrometry. Among these components, 3-methylbutanal (stimulus), methional (potato-like), beta-damascenone (sweet), dimethyl trisulfide (putrid), and 2-methoxy-4-vinylphenol (clove-like) showed the highest FD factors after heat processing of the black

tea sample. Therefore, these odorants were the most important components involved in changing the black tea odor during heat processing. In addition, the precursor of beta-damascenone in black tea infusion was investigated, and 3-hydroxy-7,8-didehydro-beta-ionol was determined to be one of the beta-damascenone-generating compounds for the first time.

Record 61
AU: Koshiishi,-C.; Crozier,-A.; Ashihara,-H.
TI: Profiles of purine and pyrimidine nucleotides in fresh and manufactured tea leaves.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Sept 2001. v. 49 (9) p. 4378-4382.
AB: Profiles of nucleotide levels in two varieties of Japanese green teas (cv. Yabukita and Saemidori), a Chinese green tea (Longjing), and two Japanese black teas (cv. Benifuuki and Benihikari) were determined and compared with that of fresh tea leaves. The concentration of 5'-nucleotides in green tea was much higher than in black tea. Nucleoside diphosphates were present in larger amounts than nucleoside triphosphates in manufactured green and black teas, whereas the triphosphates predominated in fresh tea leaves. Low levels of 3'-nucleotides were found in green and black teas. Inosine 5'-monophosphate, which is utilized as a seasoning component, was found in all manufactured teas in concentrations ranging from 50 to 200 nmol/g of dry weight. The levels of both inosine 5'-monophosphate and guanosine 5'-monophosphate were high in Chinese Longjing green tea. The unique profiles of nucleotides in manufactured teas may be a consequence of the action of degradation enzymes, such as ribonuclease, apyrase, phosphatase, nucleotidase, and adenosine 5'-monophosphate deaminase during the commercial processing of the young leaves.

Record 62
AU: Wong,-I.Y.F.; He,-Z.D.; Huang,-Y.; Chen,-Z.Y.
TI: Antioxidative activities of phenylethanoid glycosides from Ligustrum purpurascens.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. June 2001. v. 49 (6) p. 3113-3119.
AB: Tea and kudingcha (bitter tea) are the two most popular beverages consumed in China. Tea derived from the leaves of Camellia sinensis has been well studied for its various health benefits, but there are very limited data on the biological activities of bitter tea derived from the leaves of Ligustrum purpurascens (LP). The present study was carried out to characterize the antioxidants present in the bitter tea brewed from the leaves of LP. It was found that the crude glycoside fraction possessed strong protection against oxidation of human low-density lipoprotein (LDL). The column chromatographic separation led to the isolation of five phenylethanoid glycosides, namely, acteoside, ligupurpuroside A, cis-ligupurpuroside B, trans-ligupurpuroside B, and osmanthuside B. When acteoside was heated in the boiling water, it was isomerized to form isoacteoside. Acteoside, isoacteoside, and ligupurpuroside A purified from LP were protective, whereas cis-ligupurpuroside B, trans-ligupurpuroside B, and osmanthuside B exhibited no protection to human LDL from Cu(2+)-medicated oxidation. Acteoside, isoacteoside, and ligupurpuroside A were also effective in preventing the peroxyl free radical-induced oxidation of alpha-tocopherol in human LDL. The antioxidant activities of acteoside, isoacteoside, and ligupurpuroside A were comparable to that observed for a green tea antioxidant, (-)-epicatechin gallate. The inhibitory effect of these three phenylethanoid glycosides on oxidation of human LDL and alpha-tocopherol was dose-dependent at concentrations of 5-40 micromolar. The present results suggest that the bitter tea beverage derived from LP contains effective antioxidants that may have an equal.
benefit as a green tea beverage.

Record 63
AU: Miean,-K.H.; Mohamed,-S.

TI: Flavonoid (Myricetin, quercetin, kaempferol, luteolin, and apigenin) content of edible tropical plants.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. June 2001. v. 49 (6) p. 3106-3112.
AB: Studies were conducted on the flavonoids (myricetin, quercetin, kaempferol, luteolin, and apigenin) contents of 62 edible tropical plants. The highest total flavonoids content was in onion leaves (1497.5 mg/kg quercetin, 391.0 mg/kg luteolin, and 832.0 mg/kg kaempferol), followed by Semambu leaves (2041.0 mg/kg), bird chili (1663.0 mg/kg), black tea (1491.0 mg/kg), papaya shoots (1264.0 mg/kg), and guava (1128.5 mg/kg). The major flavonoid in these plant extracts is quercetin, followed by myricetin and kaempferol. Luteolin could be detected only in broccoli (74.5 mg/kg dry weight), green chili (33.0 mg/kg), bird chili (1035.0 mg/kg), onion leaves (391.0 mg/kg), belimbi fruit (202.0 mg/kg), belimbi leaves (464.5 mg/kg), French bean (11.0 mg/kg), carrot (37.5 mg/kg), white radish (9.0 mg/kg), local celery (80.5 mg/kg), limau purut leaves (30.5 mg/kg), and dried asam gelugur (107.5 mg/kg). Apigenin was found only in Chinese cabbage (187.0 mg/kg), bell pepper (272.0 mg/kg), garlic (217.0 mg/kg), belimbi fruit (458.0 mg/kg), French peas (176.0 mg/kg), snake gourd (42.4 mg/kg), guava (579.0 mg/kg), wolfberry leaves (547.0 mg/kg), local celery (338.5 mg/kg), daun turi (39.5 mg/kg), and kadok (34.5 mg/kg). In vegetables, quercetin glycosides predominate, but glycosides of kaempferol, luteolin, and apigenin are also present. Fruits contain almost exclusively quercetin glycosides, whereas kaempferol and myricetin glycosides are found only in trace quantities.

Record 64
AU: Ching,-L.S.; Mohamed,-S.
TI: Alpha-tocopherol content in 62 edible tropical plants.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. June 2001. v. 49 (6) p. 3101-3105.
AB: Vitamin E was determined by the high-performance liquid chromatography (HPLC) method. All the plants tested showed differences in their alpha-tocopherol content and the differences were significant ($p < 0.05$). The highest alpha-tocopherol content was in Sauropus androgynus leaves (426.8 mg/kg edible portion), followed by Citrus hystrix leaves (398.3 mg/kg), Calamus scipronum (193.8 mg/kg), starfruit leaves Averrhoa belimbi (168.3 mg/kg), red pepper Capsicum annum (155.4 mg/kg), local celery Apium graveolens (136.4 mg/kg), sweet potato shoots Ipomoea batatas (130.1 mg/kg), Pandanus odorus (131.5 mg/kg), Oenanthe javanica (146.8 mg/kg), black tea Camelia chinensis (183.3 mg/kg), papaya Carica papaya shoots (111.3 mg/kg), wolfberry leaves Lycium chinense (94.4 mg/kg), bird chili Capsicum frutescens leaves (95.4 mg/kg), drumstick Moringa oleifera leaves (90.0 mg/kg), green chili Capsicum annum (87 mg/kg), Allium fistulosum leaves (74.6 mg/kg), and bell pepper Capsicum annum (71.0 mg/kg). alpha-Tocopherol was not detected in Brassica oleracea, Phaeomeria speciosa, Pachyrrhizus speciosa, Pleurotus sajor-caju, and Solanum melongena.

Record 65
AU: Motta,-S.-da.; Soares,-L.M.V.
TI: Survey of Brazilian tomato products for alternariol, alternariol monomethyl ether, tenuazonic acid and cyclopiazonic acid.
SO: Food-addit-contam. London ; Philadelphia : Taylor & Francis, c1984-. July 2001. v. 18 (7) p. 630-634.
AB: Alternariol (AOH), alternariol monomethyl ether (AME) and tenuazonic acid (TEA) are secondary metabolites of Alternaria species. Cyclopiazonic acid (CPA) is produced by fungi belonging to the ubiquitous genera of Penicillium and Aspergillus and has been found in a wide range of foods. These toxins were searched for by liquid chromatography with diode-array detection in tomato products processed and sold in Brazil. Eighty samples of tomato products were examined (juice 11, pulp 22, puree 22, paste 24 and whole stewed tomato 1). Eleven brands sold nationwide were covered. TEA was found in seven samples of tomato pulp (39-111 ng/g) and four samples of tomato puree (29-76 ng/g). CPA was found in six samples of pulp (64-178 ng/g) and two samples of puree (36-117

ng/g). Co-occurrence of TEA and CPA was found in two samples of puree and one of pulp. This is the first time that the presence of CPA has been reported in tomato products. Neither AME nor AOH were detected in the samples.

Record 66
AU: Martins,-M.L.; Martins,-H.M.; Bernardo,-F.
TI: Fumonisins B1 and B2 in black tea and medicinal plants.
SO: J-food-prot. Des Moines, Iowa : International Association of Milk, Food and Environmental Sanitarians. Aug 2001. v. 64 (8) p. 1268-1270.
AB: Fumonisins are mycotoxins produced by Fusarium moniliforme that are prevalent in cereals and other agricultural products. These mycotoxins have been pointed to as a natural cause of equine leukoencephalomalacia, porcine pulmonary edema, and human esophageal cancer. A total of 87 samples, 18 black tea samples and 69 samples of four different medicinal plants (chamomile, leaves of the orange tree, leaves and flowers of the linden tree, and corn silk), for infusions preparations were acquired from supermarkets in Lisbon, Portugal. The samples were analyzed for the incidence and levels of fumonisin B1 (FB1) and fumonisin B2 (FB2) by high-performance liquid chromatography. The detection limit was 20 microgram/kg for both FB1 and FB2. FB1 was detected in 55 (65.5%) of the 87 samples. The highest number of positive samples was found in black tea (88.8%), with levels ranging from 80 to 280 microgram/kg. Relative to the medicinal plants, the leaves of the orange tree had higher concentrations of FB1 (range, 350 to 700 microgram/kg) followed by leaves and flowers of the linden tree (range, 20 to 200 microgram/kg). The samples of corn silk and chamomile had less contamination of FB1, with concentrations ranging from 50 to 150 microgram/kg and 20 to 70 microgram/kg, respectively. None of the samples tested had contamination of FB2. This is the first report of the natural occurrence of fumonisins in black tea and medicinal plants in Portugal. We reinforce the necessity to implement risk management measures for safety control of this kind of product.

Record 67
AU: Fujimura,-Y.; Tachibana,-H.; Yamada,-K.
TI: A tea catechin suppresses the expression of the high-affinity IgE receptor Fc epsilon RI in human basophilic KU812 cells.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. May 2001. v. 49 (5) p. 2527-2531.
AB: Human basophilic KU812 cells express the high-affinity IgE receptor FcepsilonRI, which plays a central role in the IgE-mediated allergic response. The effect of several major tea catechins, (+)-catechin, (-)-epicatechin, (-)-epigallocatechin, (-)-epicatechin gallate, and (-)-epigallocatechin gallate (EGCg), on the cell surface expression of FcepsilonRI in KU812 cells was studied. Flow cytometric analysis showed that only EGCg was able to decrease the cell surface expression of FcepsilonRI after a 24 h treatment in a dose-dependent manner. Moreover, immunoblot analysis revealed that the total cellular expression of the FcepsilonRI alpha chain decreased upon treatment with EGCg. FcepsilonRI is a tetrameric structure comprising one alpha chain, one beta chain, and two gamma chains. The level of mRNA production of each subunit in KU812 cells was investigated. KU812 cells treated with EGCg expressed lower levels of FcepsilonRI alpha and gamma mRNA than nontreated cells. These results suggest that EGCg has an ability to down-regulate FcepsilonRI expression, and this suppressive effect may be due to the down-regulation of FcepsilonRI alpha and gamma mRNA levels.

Record 68
AU: Kim,-K.Y.; Davidson,-P.M.; Chung,-H.J.
TI: Antibacterial activity in extracts of Camellia japonica L. petals and its application to a model food system.
SO: J-food-prot. Des Moines, Iowa : International Association of Milk, Food and Environmental Sanitarians. Aug 2001. v. 64 (8) p. 1255-1260.

AB: The potential presence of naturally occurring antimicrobials in petals of Camellia japonica L., a member of the tea family, was investigated against foodborne pathogens in microbiological media and food. Petals of the camellia flower (C. japonica L.) were extracted with methanol and fractionated into basic, acidic, and neutral fractions. The acidic fraction (equivalent to 1.0 g of raw sample per disk) produced an inhibitory zone of 14 to 19 mm (diameter) in a disk assay against the pathogens Salmonella Typhimurium DT104, Escherichia coli O157:H7, Listeria monocytogenes, and Staphylococcus aureus on agar plates. Silica gel adsorption column chromatography, Sephadex LH-20 column chromatography, and preparative purification by high-pressure liquid chromatography were used to purify compounds in the fraction. The mass spectrum of the antibacterial compound isolated had a molecular ion (M(+)) of m/z 116 and showed good conformity with the spectrum of fumaric acid (HOOC-CH=CH-COOH). An aqueous extract from the petals of C. japonica L. had an inhibitory effect on growth of all pathogens at 37 degrees C in microbiological media by increasing the lag phase. None of the microorganisms was inhibited completely. Milk was used as a model food system. Aqueous extract at a concentration of 100 mg/ml was bacteriostatic against all the foodborne pathogens in the milk stored at 25 degrees C for up to 4 days.

Record 69
AU: Kato,-M.; Shibamoto,-T.
TI: Variation of major volatile constituents in various green teas from Southeast Asia.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Mar 2001. v. 49 (3) p. 1394-1396.
AB: A total of 15 green tea samples were prepared from fresh tea leaves obtained from three different countries: two from Laos, seven from Myanmar, and six from Vietnam. The volatile aroma constituents of the 15 samples were analyzed by gas chromatography/mass spectroscopy. Eleven aroma constituents were chosen from over 100 chemicals found in the samples to compare differences among various teas. They were hexanal, 1-penten-3-ol, heptanal, 1-pentenal, (Z)-2-penten-1-ol, (Z)-3-penten-1-ol, linalool oxide (trans-furanoid), linalool oxide (cis-furanoid), linalool, linalyl propanoate, and geraniol. Generally, concentrations of linalool and hexanal seem to play an important role in the quality of green teas. Green teas from Laos and Myanmar contained heterocyclic compounds, such as pyridines and pyrazines, formed by high-temperature processing. The presence of these heterocyclic compounds suggested that the temperature used for tea processing plays an important role in the formation of aroma chemicals in green teas.

Record 70
AU: Zoysa,-A.K.N.; Loganathan,-P.; Hedley,-M.J.
TI: Comparison of the agronomic effectiveness of a phosphate rock and triple superphosphate as phosphate fertilisers for tea (Camellia sinensis L.) on a strongly acidic Ultisol.
SO: Nutr-cycl-agroecosyst. Dordrecht, The Netherlands ; Boston : Kluwer, c1996-. 2001. v. 59 (2) p. 95-105.
AB: Phosphorus deficiency is a major problem affecting tea production in the highly weathered acid soils of humid and sub-humid tropics which are known to have high P fixing capacities. As many of these soils are strongly acidic and receive high rainfall, low-cost phosphate rock (PR) may effectively supply the plant P needs and limited preliminary experiments suggest this is so. A long-term glasshouse trial was conducted on 8-month old tea seedlings to compare the agronomic effectiveness of a locally available PR (Eppawala phosphate rock, EPR) with triple superphosphate (TSP) applied to a strongly acidic (pH water 4.55) marginally P deficient Rhodustult from Sri Lanka at six rates ranging from 10 to 60 kg P ha(-1). The results showed that TSP or EPR fertiliser at a rate as low as 10 or 20 kg P ha(-1) was sufficient to obtain maximum tea yield. The agronomic effectiveness of EPR was equal to that of TSP at the 5- and 10-month samplings. The concentration of soil P extracted by a cation-anion exchange

resin membrane (resin-P) was higher in the TSP treated soil at 5 months due to its greater solubility but at 10 months, the EPR produced higher resin-P due to its increased dissolution over time. In the presence of tea plants, 52% of P from the EPR applied at the rate of 10 kg ha(-1), was dissolved at 5 months compared to 75% of dissolution at the 10-month sampling. In the absence of plants, the corresponding dissolution figures were 40% at 5 months and 55% at 10 months. The concentration of inorganic P extracted by 0.1 M NaOH (NaOH-Pi)(loosely characterising Fe + Al bound P) was significantly higher in the TSP treated soil and concentration of P extracted by 0.5 M H2SO4 (Ca bound P) was higher in the.

EPR treated soil. The results suggest that the low-cost, locally available EPR may be used profitably as a maintenance P fertiliser for tea plantations in moderately P deficient soils, which need to be confirmed by field studies.

Record 71
AU: Varilek,-G.W.; Yang,-F.; Lee,-E.Y.; deVilliers,-W.J.S.; Zhong,-J.; Oz,-H.S.; Westberry,-K.F.; McClain,-C.J.
TI: Green tea polyphenol extract attenuates inflammation in interleukin-2-deficient mice, a model of autoimmunity.
SO: J-nutr. Bethesda : American Society for Nutritional Sciences. July 2001. v. 131 (7) p. 2034-2039.
AB: Green tea polyphenols (GrTP) have been previously shown to decrease endotoxin-induced tumor necrosis factor-alpha production and lethality in mice. Our present studies demonstrate that GrTP inhibit inflammatory responses and may be useful in treating chronic inflammatory states, such as inflammatory bowel disease. In this preliminary study, we examined whether GrTP decrease disease activity in interleukin-2-deficient (IL-2(-/-) mice. Eight-week old IL-2(-/-) C57BL/6J mice who were fed nonpurified diet were randomly assigned to receive water with GrTP (5 g/L) or water alone (control) for up to 6 wk. After 1 wk, explant colon and lamina propria lymphocyte (LPL) cultures were established from a subgroup of mice and supernatants collected. Culture supernatants from GrTP-treated mice showed decreased spontaneous interferon-gamma and tumor necrosis factor-alpha secretion compared with that of controls. At 6 wk, the GrTP group had less severe colitis as demonstrated by lower histologic scores and wet colon weights. This was associated with lower plasma levels of serum amyloid A, increased weight gain and improved hematocrits. These results show that GrTP attenuated inflammation in IL-2(-/-) mice and suggest a role for GrTP in treating chronic inflammatory diseases such as inflammatory bowel disease.

Record 72
AU: Warden,-B.A.; Smith,-L.S.; Beecher,-G.R.; Balentine,-D.A.; Clevidence,-B.A.
TI: Catechins are bioavailable in men and women drinking black tea throughout the day.
SO: J-nutr. Bethesda : American Society for Nutritional Sciences. June 2001. v. 131 (6) p. 1731-1737.
AB: Tea consumption has been associated with reduced risk of both cancer and cardiovascular disease in population studies, but clinical data demonstrating bioavailability of the individual catechins and other polyphenolic components of tea are limited. This study assessed the apparent bioavailability of the prominent catechins from black tea in humans drinking tea throughout the day. After 5 d of consuming a low flavonoid diet, subjects drank a black tea preparation containing 15.48, 36.54, 16.74, and 31.14 mg of (-)-epigallocatechin (EGC), (-)-epicatechin (EC), (-)-epigallocatechin gallate (EGCG) and (-)-epicatechin gallate (ECG), respectively, at four time points (0, 2, 4 and 6 h). Blood, urine and fecal specimens were collected over a 24- to 72-h period and catechins were quantified by HPLC with coularray detection. Plasma concentrations of EGC, EC and EGCG increased significantly relative to baseline ($P < 0.05$). Plasma EGC, EC and EGCG peaked after 5 h, whereas ECG peaked at 24 h. Urinary excretion of EGC and EC, which peaked at 5 h, was increased relative to baseline amounts ($P < 0.05$) and fecal excretion of all four catechins was increased relative to baseline ($P < 0.05$). Approximately 1.68% of ingested

catechins were present in the plasma, urine and feces, and the apparent bioavailability of the gallated catechins was lower than the nongallated forms. Thus, catechins were bioavailable. However, unless they are rapidly metabolized or sequestered, the catechins appeared to be absorbed in amounts that were small relative to intake.

Record 73
AU: Hodgson,-J.M.; Puddey,-I.B.; Mori,-T.A.; Burke,-V.; Baker,-R.I.; Beilin,-L.J.
TI: Effects of regular ingestion of black tea on haemostasis and cell adhesion molecules in humans.
SO: Eur-j-clin-nutr. Basingstoke : Stockton Press. Oct 2001. v. 55 (10) p. 881-886.
AB: Objective: To assess the effects in humans of regular ingestion of black tea on haemostasis-related variables and cell adhesion molecules. Design: Twenty-two subjects were recruited from the general population to a randomised-controlled crossover study. Subjects stopped drinking tea, apart from that provided, for the duration of the study. During a 4-week baseline period all subjects drank 5 cups/day (250 ml) of hot water. The effects of 5 cups/day of black tea for 4 weeks were then compared with hot water. Platelet aggregation in response to three doses of collagen and ADP, plasma concentrations of coagulation and fibrinolytic factors (fibrinogen, factor VII, tPA, PAI-1) and plasma concentrations of cell adhesion molecules (soluble P-selectin, E-selectin, ICAM-1, VCAM-1) were assessed twice, one week apart, at the end of each period. Twenty-four hour urinary concentration of 4-O-methylgallic acid (4OMGA), assessed once at the end of each period, was used as a marker of black tea polyphenol intake. Results: The 24 h urinary excretion of 4OMGA was increased during regular ingestion of black tea in comparison to hot water ($P<0.0001$). Black tea resulted in lower soluble P-selectin ($P=0.01$) in comparison to hot water, but did not influence other adhesion molecules. Soluble P-selectin was significantly correlated with mean collagen-stimulated platelet aggregation at baseline ($r=0.61$, $P=0.003$), and during regular ingestion of hot water ($r=0.70$, $P<0.0001$) and black tea ($r=0.51$, $P=0.01$). However, platelet aggregation was not different between the black tea and hot water periods for collagen- or ADP-stimulated aggregation at any dose. Coagulation and fibrinolytic factors were also not different between.
periods. Conclusions: The effect of black tea on soluble P-selectin provides a potential mechanism for cardiovascular benefits of regular ingestion of tea.

Record 74
AU: Hu,-Q.; Pan,-G.; Zhu,-J.
TI: Effect of selenium on green tea preservation quality and amino acid composition of tea protein.
SO: J-hortic-sci-biotech. Ashford, Kent, England : Headley Brothers Ltd., [1998-. May 2001. v. 76 (3) p. 344-346.

Record 75
AU: Wang,-D.; Wang,-C.; Li,-J.; Zhao,-G.
TI: Components and activity of polysaccharides from coarse tea.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Jan 2001. v. 49 (1) p. 507-510.
AB: Coarse tea contained a high content of polysaccharide complex. Composed of polysaccharide and protein, the polysaccharide complex from tea (TPS) belonged to glycoprotein with the molecular weight () of (10.7-11.0) x 10(4). When mice (7 weeks old, C57BL/8) were injected with TPS, the levels of blood glucose (BG) in normal mice and model mice with high BG were decreased significantly by averages of 13.54 and 22.18%, respectively. The antibody concentration (OD413nm) in the mice injected with 2.4 mg/mL TPS was increased evidently by 44.93% ($p < 0.01$). TPS treatment was beneficial not only for the subsequent production of interleukin (IL) 2 in spleen cells of adjuvant arthritis (AA) rats but also

because it prohibited the body from producing too much IL-1 in AA rats. Treatment of diabetes with coarse tea in both China and Japan may be related to TPS and the content of TPS in coarse tea.

Record 76
AU: Chen,-Z.Y.; Zhu,-Q.Y.; Tsang,-D.; Huang,-Y.
TI: Degradation of green tea catechins in tea drinks.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Jan 2001. v. 49 (1) p. 477-482.
AB: Green tea catechins (GTC) namely (-) epicatechin (EC), (-) epicatechin gallate (ECG), (-) epigallocatechin (EGC), and (-) epigallocatechin gallate (EGCG), have been studied extensively for their wide-ranging biological activities. The goal of the present study was to examine the stability of GTC as a mixture under various processing conditions. The stability study demonstrated that GTC was stable in water at room temperature. When it was brewed at 98 degrees C for 7 h, longjing GTC degraded by 20%. When longjing GTC and pure EGCG were autoclaved at 120 degrees C for 20 min, the epimerization of EGCG to (-) gallocatechin gallate (GCG) was observed. The relatively high amount of GCG found in some tea drinks was most likely the epimerization product of EGCG during autoclaving. If other ingredients were absent, the GTC in aqueous solutions was pH-sensitive: the lower the pH, the more stable the GTC during storage. When it was added into commercially available soft drinks or sucrose solutions containing citric acid and ascorbic acid, longjing GTC exhibited varying stability irrespective of low pH value. This suggested that other ingredients used in production of tea drinks might interact with GTC and affect its stability. When canned and bottled tea drinks are produced, stored, and transported, the degradation of GTC must be taken into consideration.

Record 77
AU: Standley,-L.; Winterton,-P.; Marnewick,-J.L.; Gelderblom,-C.A.; Joubert,-E.; Britz,-T.J.
TI: Influence of processing stages on antimutagenic and antioxidant potentials of rooibos tea.
SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Jan 2001. v. 49 (1) p. 114-117.
AB: The antimutagenic and antioxidant potentials of rooibos (Aspalathus linearis) tea samples, collected from each of its major processing stages, were evaluated according to the Salmonella typhimurium mutagenicity test and the hydrogen donating ability and superoxide anion radical scavenging assays, respectively. Ten random samples were collected before and after fermentation, as well as after sun-drying, sieving, and steam pasteurization. Results indicated that the fermented tea had a significantly ($P < 0.05$) lower antimutagenic and antioxidant potential than the unfermented tea. Of the different processing stages, the most significant reduction in the antimutagenic and antioxidant property of the tea was found during the "fermentation" step. Sun-drying, sieving, and steam pasteurization also reduced the antimutagenic potential of the tea, although not to the same extent as the first processing step. The hydrogen donating ability was significantly increased after steam pasteurization in comparison to those of fermented and sun-dried tea. Pasteurization did not affect superoxide anion radical scavenging in comparison to fermented tea. Differences seem to exist in the antimutagenicity and antioxidant potencies of the tea sampled at the various stages during processing. A possible role of tea polyphenols in the antimutagenic and antioxidant activities of the tea is suggested as processing caused a significant reduction in the total polyphenolic content.

Record 78
AU: Tang,-S.; Kerry,-J.P.; Sheehan,-D.; Buckley,-D.J.; Morrissey,-P.A.
TI: Antioxidative effect of added tea catechins on susceptibility of cooked red meat, poultry and fish patties to lipid oxidation.
SO: Food-res-int. Oxford : Elsevier Science Ltd. 2001. v. 34 (8) p. 651-657.

AB: The comparative antioxidant activity of added tea catechins on susceptibility of cooked and overwrapped red meat (beef and pork), poultry (chicken, duck and ostrich) and fish (whiting and mackerel) to lipid oxidation was investigated. Fresh meats, poultry and fish, purchased from a local market, were trimmed to remove bones, skin and visible fat and minced through a 4-mm plate. The minced muscle from each species was treated with either 1% NaCl (S), 300 mg tea catechins kg-1 minced muscle (TC) or 1% NaCl plus 300 mg tea catechins kg-1 minced muscle (TCS). Control minced muscle samples (C) contained neither NaCl nor tea catechins. Patties (50 g), prepared from treated and untreated minced muscle, were cooked until the core temperature reached 75 degrees C, cooled down to room temperature and held in a refrigerated (4 degrees C) and illuminated (616 lux) display cabinet for 10 days. Oxidative stability (TBARS) was measured at 3-day intervals. The susceptibility of cooked patties to lipid oxidation was closely related to lipid content, concentration of unsaturated fatty acids and presence of iron in different species. Addition of NaCl to raw minced muscle significantly ($P < 0.05$) promoted lipid oxidation for cooked patties regardless of species sources. Tea catechins added at a level of 300 mg kg-1 minced muscle significantly ($P < 0.01$) inhibited the pro-oxidation caused by NaCl and controlled lipid oxidation for all cooked muscle patties examined. Tea catechins at concentrations greater than 300 mg kg-1 were necessary to reduce oxidation for mackerel patties containing high levels of lipids and unsaturated fatty acids. The high affinity of tea catechins for the lipid.
bilayers of muscle and the radical scavenging abilities of tea catechins may be possible mechanisms to explain the oxidative stability in cooked muscle foods.

Record 79
AU: Koike,-S.T.; Azad,-H.R.; Cooksey,-D.A.
TI: Xanthomonas leaf spot of catnip: a new disease caused by a pathovar of Xanthomonas campestris.
SO: Plant-dis. [St. Paul, Minn., American Phytopathological Society]. Nov 2001. v. 85 (11) p. 1157-1159.
AB: Xanthomonas leaf spot is a new disease that has occurred on catnip (Nepeta cataria). Catnip is grown commercially in California for use as herbs, seasonings, and tea. This disease has developed recently on catnip transplants that are produced in enclosed greenhouses. Symptoms consist of small brown flecks that are visible from both sides of a leaf. The flecks later develop into larger, dark brown, angular leaf spots. Severe infection reduced the quality and marketability of the transplants. Xanthomonas campestris, as identified by biochemical, physiological, and molecular tests, was consistently isolated from symptomatic plants, and selected strains caused similar symptoms when inoculated onto catnip test plants. However, catnip strains failed to cause any symptoms when inoculated onto nine other plants in the Lamiacease family and five other hosts of known X. campestris pathovars. Catnip plants showed no symptoms when inoculated with X. campestris pvs. campestris, carotae, and vesicatoria. Catnip also was not susceptible to the X. campestris pathogen isolated from lavender. This is the first report of a bacterial disease of catnip caused by a Xanthomonas pathogen, and the catnip strains may be a new and distinct pathovar of X. campestris.

Record 80
AU: Vries,-J.H.M.-de.; Hollman,-P.C.H.; Amersfoort,-I.-van.; Olthof,-M.R.; Katan,-M.B.
TI: Red wine is a poor source of bioavailable flavonols in men.
SO: J-nutr. Bethesda : American Society for Nutritional Sciences. Mar 2001. v. 131 (3) p. 745-748.
AB: Red wine is a source of polyphenolic antioxidants, of which flavonols such as quercetin are representatives. Red wine might therefore prevent LDL oxidation and atherosclerosis. However, data on the bioavailability of flavonols from wine are lacking. Therefore, we compared the bioavailability of flavonols, especially

quercetin, from red wine with that from the major dietary sources, yellow onions and black tea. Twelve healthy men consumed 750 mL red wine, 50 g fried onions or 375 mL of black tea, each for 4 d in random order. These supplements provided similar amounts of quercetin (14-16 mg). There was a washout period of 3 d between each period of supplementation. The plasma quercetin concentration after the consumption of wine was lower than that after onions ($P < 0.05$) and not different from that after tea. Urinary excretion of quercetin after wine did not differ from that after onions and was higher than that after tea ($P < 0.05$). We conclude that flavonols from red wine are absorbed. However, because one glass of red wine provides fewer available flavonols than one portion of onions or one glass of tea, red wine appears to be a poorer source of flavonols than these other two sources.

Record 81
AU: Schwarz,-K.; Bertelsen,-G.; Nissen,-L.R.; Gardner,-P.T.; Heinonen,-M.I.; Hopia,-A.; Huynh-Ba,-T.; Lambelet,-P.; McPhail,-D.; Skibsted,-L.H.; Tijburg,-L.
TI: Investigation of plant extracts for the protection of processed foods against lipid oxidation. Comparion of antioxidant assays based on radical scavening, lipid oxidation and analysis of the principal antioxidant compounds.
SO: Eur-food-res-technol. Berlin : Springer, c1999-. 2001. v. 212 (3) p. 319-328.

Record 82
AU: Trichopoulou,-A.; Naska,-A.; Vasilopoulou,-E.
TI: Guidelines for the intake of vegetables and fruit: the Mediterranean approach.
SO: Int-j-vitam-nutr-res. Bern : Hogrefe & Huber Publishers. May 2001. v. 71 (3) p. 149-153.
AB: Various studies have demonstrated that the nutrient and non-nutrient substances present in vegetables and fruit (V&F) are most likely to be responsible for the beneficial effect of the increased V&F consumption. Urged by scientific evidence, current dietary guidelines strongly recommend the consumption of V&F in substantial amounts. In a recent paper (Brit. J. Nutr. 2000; 84, 549-556) V&F availability in 10 European countries was compared with the WHO recommendations (minimum combined V&F intake of about 400 g/day/person), as well as with guidelines of a minimum daily intake of three portions of vegetables (approx. 250 g/person) and two portions of fruit (approx. 150 g/person). All countries, excluding Greece, had a vegetable intake below the recommended minimum. Moreover, in all countries, the percentages of low vegetable intake below the recommended minimum. Moreover, in all countries, the percentages of low vegetable consumers were significantly higher than those of low fruit consumers, suggesting that there is considerable room for improvement in the intake of vegetables, an important source of antioxidants. Wild edible greens are among the vegetables commonly consumed in Greece. These greens have a high flavonoid content, which in several cases substantially exceeds the respective values in foods and beverages, such as onions, black tea and red wine (Food Chemistry 2000; 70, 319-323). The high flavonoid content of edible wild greens requires consideration of their role in contemporary diet, as a possible mean for increasing vegetable consumption.

Record 83
AU: Wang,-X.; Tian,-W.
TI: Green tea epigallocatechin gallate: a natural inhibitor of fatty-acid synthase.
SO: Biochem-biophys-res-commun. Orlando, Fla. : Academic Press. Nov 16, 2001. v. 288 (5) p. 1200-1206.

Record 84
AU: Purba,-M.B.; Kouris-Blazos,-A.; Wattanapenpaiboon,-N.; Lukito,-W.; Rothenberg,-E.M.; Steen,-B.C.; Wahlqvist,-M.L.
TI: Skin wrinkling: can food make a difference.

SO: J-Am-Coll-Nutr. New York, NY : American College of Nutrition. Feb 2001. v. 20 (1) p. 71-80.
AB: Objectives: This study addressed whether food and nutrient intakes were correlated with skin wrinkling in a sun-exposed site. Methods: 177 Greek-born subjects living in Melbourne (GRM), 69 Greek subjects living in rural Greece (GRG), 48 Anglo-Celtic Australian (ACA) elderly living in Melbourne and 159 Swedish subjects living in Sweden (SWE) participating in the International Union of Nutritional Sciences IUNS "Food Habits in Later Life" study had their dietary intakes measured and their skin assessed. Food and nutrient intakes were assessed using a validated semi-quantitative food frequency questionnaire (FFQ). Skin wrinkling was measured using a cutaneous microtopographic method. Results: SWE elderly had the least skin wrinkling in a sun-exposed site, followed by GRM, GRG and ACA. Correlation analyses on the pooled data and using the major food groups suggested that there may be less actinic skin damage with a higher intake of vegetables (r(s)=-0.31, p<0.0001), olive oil (r(s)=-0.29, p<0.0001), fish (r(s)=-0.24, p<0.0001) and legumes (r(s)=-0.16, p<0.0001), and lower intakes of butter (r(s)=0.46, p<0.0001) and margarine (r(s)=0.24, p<0.001), milk products (r(s)=0.16, p<0.01) and sugar products (r(s)=0.12, p<0.01). Similar findings were obtained using regression analyses, except fish was no longer significant; 32% of the variance for actinic skin damage was predicted by six out of the ten major food groups. In particular, a high intake of vegetables, legumes and olive oil appeared to be protective against cutaneous actinic damage (collectively explaining 20% of the variance); a high intake of meat, dairy and butter appeared to be adverse (explaining <5% of the variance). Prunes.
apples and tea explained 34% of variance amongst ACA. Conclusion: This study illustrates that skin wrinkling in a sun-exposed site in older people of various ethnic backgrounds may be influenced by the types of foods consumed.

Record 85
AU: Zhu,-N.; Wang,-M.; Wei,-G.J.; Lin,-J.K.; Yang,-C.S.; Ho,-C.T.
TI: Identification of reaction products of (-)-epigallocatechin, (-)-epigallocatechin gallate and pyrogallol with 2,2-diphenyl-1-picrylhydrazyl radical.
SO: Food-chem. Oxford : Elsevier Science Limited. May 2001. v. 73 (3) p. 345-349.
AB: Catechins, the major constituents of tea, have been shown to have powerful antioxidant and antitumor activity. In this study, the radical scavenging behavior of catechins on 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) was studied. Three reaction products of (-)-epigallocatechin, (-)-epigallocatechin gallate and pyrogallol with DPPH radical were purified and identified. This study provides some insight into the specific mechanism of the antioxidant reaction of catechins. A possible mechanism for the formation of reaction products is suggested.

Record 86
AU: Abou-Arab,-A.A.K.; Abou-Donia,-M.A.
TI: Pesticide residues in some Egyptian spices and medicinal plants as affected by processing.
SO: Food-chem. Oxford : Elsevier Science Limited. Mar 2001. v. 72 (4) p. 439-445.
AB: Pesticide residues were determined in Egyptian spices and medicinal plants. For this purpose, a total of 303 samples, which represent 20 different plants were collected from sources in Egypt and several shipments All the collected samples were analyzed for the determination of organophosphorus and organochlorine residues. The obtained results showed the predominance of malathion in most of the analyzed samples. The detected concentrations of it in jews mallow, dill, celery, tea, caraway, chamomile and saffron exceeded the maximum permissible levels (MPLs), as did the concentrations of dimethoate in caraway and chamomile samples. Low levels of profenofos, pirmiphos-methyl, chloropyrifos. parathion and diazinon were determined in the analyzed samples. Residues of lindane, aldrin, dieldrin, DDT, chlordane and endrin in chamomile

samples exceeded the MPLs. Residues of aldrin and dieldrin in karkade were higher than the MPLs, as was chlordane in peppermint. Residues were not detected in the watery extract when the medicinal plant was boiled in water. Also, immersing the plants in hot water transferred some pesticide residues to the aqueous extract.

Record 87
AU: Nomura,-M.; Kaji,-A.; He,-Z.; Ma,-W.Y.; Miyamoto,-K.; Yang,-C.S.; Dong,-Z.
TI: Inhibitory mechanisms of tea polyphenols on the ultraviolet B-activated phosphatidylinositol 3-kinase-dependent pathway.
SO: J-biol-chem. Bethesda, Md. : American Society for Biochemistry and Molecular Biology. Dec 7, 2001. v. 276 (49) p. 46624-46631.

Record 88
AU: Drewnowski,-A.
TI: The science and complexity of bitter taste.
SO: Nutr-rev. Washington, D.C.: International Life Sciences Institute--ILSI Press. June 2001. v. 59 (6) p. 163-169.
AB: Food choices and eating habits are largely influenced by how foods taste. Without being the dominant taste sensation, bitter taste contributes to the complexity and enjoyment of beverages and foods. Compounds that are perceived as bitter do not share a similar chemical structure. In addition to peptides and salts, bitter compounds in foods may include plant-derived phenols and polyphenols, flavonoids, catechins, and caffeine. Recent studies have shown that humans possess a multitude of bitter taste receptors and that the transduction of bitter taste may differ between one compound and another. Studies of mixture interactions suggest further that bitter compounds suppress or enhance sweet and sour tastes and interact with volatile flavor molecules. Caffeine, a natural ingredient of tea, coffee, and chocolate, has a unique flavor profile. Used as a flavoring agent, it enhances the sensory appeal of beverages. Research developments on the genetics and perception of bitter taste add to our understanding of the role of bitterness in relation to food preference.

Record 89
AU: Ohtani,-K.; Witjaksono.; Fukumoto,-T.; Mochizuki,-F.; Yamamoto,-M.; Ando,-T.
TI: Mating disruption of the Japanese giant looper in tea gardens permeated with synthetic pheromone and related compounds.
SO: Entomol-exp-appl. Dordrecht : Kluwer Academic Publishers. Aug 2001. v. 100 (2) p. 203-209.
AB: The Japanese giant looper, Ascotis selenaria cretacea, is a serious defoliator of tea gardens in Japan. The females produce racemic (Z,Z)-6,9-cis-3,4-epoxynonadecadiene (epo3,Z6,Z9-19:H, main component) and (Z,Z,Z)-3,6,9-nonadecatriene (Z3,Z6,Z9-19:H, minor component). The orientation of the males to the synthetic pheromone placed in a trap was strongly disrupted by Z3,Z6,Z9-19:H or a mixture of its monoepoxy derivatives (epoxydiene mixture, EDM) impregnated in septa and placed around the trap. Based on this result, polyethylene tubes containing Z3,Z6,Z9-19:H or EDM were prepared and effect of these dispensers was examined in a field. Disruption of male orientation to synthetic pheromone traps was achieved in orchards permeated with Z3,Z6,Z9-19:H at dispenser density of 3000 and 5000 tubes ha(-1) (release rate: 0.55-0.61 mg day(-1) tube(-1)) and with EDM at every tested dose, 250-5000 tubes ha(-1) (release rate: 0.25-0.39 mg day(-1) tube(-1)). Furthermore, disruption of mating in tethered females was observed in these orchards; particularly, the mating was perfectly inhibited in the areas treated with EDM at 3000 and 5000 tubes ha(-1). This is the first formulation for the mating disruption of a geometrid pest.

Record 90
AU: Owuor,-P.O.; Obanda,-M.
TI: Comparative responses in plain black tea quality parameters of different tea clones to fermentation temperature and duration.

SO: Food-chem. Oxford : Elsevier Science Limited. Feb 15, 2001. v. 72 (3) p. 319-327.
AB: The amounts of black tea theaflavins, brightness, and sensory evaluations varied with clones in the order clone 6/8 > SC12/28 > S15/10, while thearubigins and total colour changed in the reverse order. The rates of change of these plain tea quality parameters varied in all clones causing significant (P less than or equal to 0.05) fermentation duration and clone interactions. Thus, the total amount and rate of development of each quality parameter is unique to a clone and a change in fermentation duration for optimal quality parameter achievement in one clone cannot be extrapolated to another clone. Although processing of black tea at low fermentation temperatures improved black tea quality, there was no significant difference between fermenting at 15 and 20 degrees C. Long fermentation duration and high temperature favoured production of more intense coloured black teas with high thearubigin levels, which were less bright and had lower theaflavin levels. There were significant (P less than or equal to 0.05) interactions between fermentation duration and temperature in all the plain black tea parameters development indicating that their rates of formation and amounts formed varied with time at different temperatures. Clones 6/8 and SC12/28 plain tea quality parameters were more sensitive to temperature and duration changes than clone S15/10. Thus there are clones, which can withstand high temperature and long fermentation duration without drastic impairment of their plain black tea quality parameters.

Record 91
AU: Sava,-V.M.; Galkin,-B.N.; Hong,-M.Y.; Yang,-P.C.; Huang,-G.S.
TI: A novel melanin-like pigment derived from black tea leaves with immuno-stimulating activity.
SO: Food-res-int. Oxford : Elsevier Science Ltd. 2001. v. 34 (4) p. 337-343.
AB: Melanin-like pigment (MLP) was isolated from black tea leaves by alkaline extraction, acid hydrolysis, and repeated precipitation, and a yield of 2% (dry weight basis) was obtained. The isolated MLP possessed physical and chemical properties comparable to melanins extracted from other sources. The immuno-modulating activity of MLP was measured using plaque-forming cells assay. Oral administration of MLP significantly stimulated the spleen lymphoid tissue in mice at doses ranging from 50 to 200 mg/kg body weight, with a maximal antibody response at 75 mg/kg. The immuno-stimulating activity of tea MLP may serve as a platform for drug discovery, and the abundance of MLP from tea suggests an economical source for health food application.

Record 92
AU: Shahrzad,-S.; Aoyagi,-K.; Winter,-A.; Koyama,-A.; Bitsch,-I.
TI: Pharmacokinetics of gallic acid and its relative bioavailability from tea in healthy humans.
SO: J-nutr. Bethesda : American Society for Nutritional Sciences. Apr 2001. v. 131 (4) p. 1207-1210.
AB: Gallic acid (GA), a food component that is especially abundant in tea, is an antimutagenic, anticarcinogenic and anti-inflammatory agent. We conducted a study using acidum gallicum tablets that contained 10% GA and 90% glucose and a black tea brew that contained 93% of its GA in free form to determine the pharmacokinetics and relative bioavailability of GA in healthy humans. After the administration of a single oral dose of acidum gallicum tablets or tea (each containing 0.3 mmol GA) to 10 volunteers, plasma and urine samples were collected over various time intervals. Concentrations of GA and its metabolite, 4-O-methylgallic acid (4OMGA), were determined, and the pharmacokinetic parameters were calculated. GA from both the tablets and tea was rapidly absorbed and eliminated with mean half-lives of 1.19 +/- 0.07 and 1.06 +/- 0.06 h and mean maximum concentrations of 1.83 +/- 0.16 and 2.09 +/- 0.22 micromol/L (plasma), respectively. After oral administration of the tablets and black tea, 36.4 +/- 4.5 and 39.6 +/- 5.1% of the GA dose were extracted in urine as GA and 4OMGA, respectively. The relative bioavailability of GA from tea compared with

that from the tablets was 1.06 +/- 0.26, showing that GA is as available from drinking tea as it is from swallowing tablets of GA.

Record 93
AU: Schuurman,-F.
TI: Hybrid tea rose plant named 'Sunluck'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Jan 23, 2001. (11,752) 2 p.
AB: Abstract: A hybrid tea rose plant variety producing yellow flowers of good form.

Record 94
AU: Meilland,-A.A.
TI: Hybrid tea rose plant named 'Meirecrom'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Jan 2, 2001. (11,731) 2 p.
AB: A new and distinct variety of Hybrid Tea rose plant is provided which forms attractive double blossoms that are tangerine in coloration and are borne on very long thick stems. Such blossoms possess no fragrance. The plant exhibits an erect growth habit, dark green and semi-glossy foliage, and good disease resistance. The buds are large and well turbinated. The new variety is particularly well suited for producing cut flowers under greenhouse growing conditions.

Record 95
AU: Moustakas,-N.K.; Akoumianakis,-K.A.; Passam,-H.C.
TI: Cadmium accumulation and its effect on yield of lettuce, radish, and cucumber.
SO: Commun-soil-sci-plant-anal. Monticello, N.Y. : Marcel Dekker Inc. 2001. v. 32 (11/12) p. 1793-1802.
AB: Pot experiments were conducted on lettuce, radish, and cucumber plants under glasshouse conditions to study the effects of increasing cadmium (Cd) application on yields and Cd concentration in the edible plant parts. Cadmium was applied to the pot medium (peat-soil mixture) at 0, 1, 5, 10 and 20 mg kg(-1). Although toxicity symptoms were not observed in any plant the Cd concentration of the edible plant parts of all the experimental material was increased by Cd treatment in a relationship characterized by a quadratic regression. Lettuce yield was suppressed at rates of Cd application higher than 10 mg kg(-1) whereas in radish and cucumber yields were not affected by Cd application. Cadmium accumulation occurred in lettuce and cucumber edible parts and in the former the "outer" leaves accumulated 5-43% more Cd than the "inner" leaves. Diethylene triamine penta acetic acid-triethanol amine (DTPA-TEA) extractable Cd significantly correlated with the Cd concentration in lettuce leaves and the flesh and skin of cucumber fruits indicating that this extractant could be used to predict Cd concentration in the edible parts of these two crops.

Record 96
AU: Tang,-S.; Sheehan,-D.; Buckley,-D.J.; Morrissey,-P.A.; Kerry,-J.P.
TI: Anti-oxidant activity of added tea catechins on lipid oxidation of raw minced red meat, poultry and fish muscle.
SO: Int-j-food-sci-technol. Oxford : Blackwell Scientific Ltd. Aug 2001. v. 36 (6) p. 685-692.
AB: The comparative anti-oxidative effects of added tea catechins (TC) and alpha-tocopherol to raw minced red meat (beef and pork), poultry (chicken, duck and ostrich) and fish (whiting and mackerel) muscle on susceptibility to lipid oxidation were investigated during 10 days of refrigerated (4 degrees C) display. Fresh meats, poultry and fish, purchased from a local market, were trimmed to remove bones, skin and surface fat and minced through a 4 mm plate. The minced muscle of each species was treated with either the addition of 300 mg TC kg(-1) minced muscle (TC300) or 300 mg alpha-tocopherol kg(-1) minced muscle

(VE300). Minced muscle without any additives served as control (C). Oxidative stability (TBARS) was measured at 3-day intervals. Total lipids, fatty acid composition, total iron and haem iron from minced muscle for each species were also analysed. The susceptibility of untreated minced muscle to lipid oxidation was in the decreasing order: mackerel > beef > duck > ostrich > pork greater than or equal to chicken > whiting. This may be because of the different content of total fat, iron and fatty acid composition between species. The TC300 significantly ($P < 0.05$) reduced lipid oxidation compared with controls for all seven species as shown by lower TBARS values. The anti-oxidant potential of TC was two to fourfold greater than that of alpha-tocopherol at the same concentration and this potential was species dependent. The VE300 showed limited capacity in inhibiting lipid oxidation for pork, chicken, duck and whiting. The results obtained show that TCs are powerful natural antioxidants when used in minced muscle food.

Record 97
AU: Grivetti,-L.E.; Corlett,-J.L.; Lockett,-C.T.
TI: Food in American History. 2. Turkey. Birth of a nation: colonialization to the revolution (1565-1776).
SO: Nutr-today. Hagerstown, Md. : Lippincott Williams & Wilkins. Mar/Apr 2001. v.36 (2) p. 88-96.

Record 98
AU: Wang,-H.; Helliwell,-K.
TI: Determination of flavonols in green and black tea leaves and green tea infusions by high-performance liquid chromatography.
SO: Food-res-int. Oxford : Elsevier Science Ltd. 2001. v. 34 (2/3) p. 223-227.
AB: Tea flavonols are potent antioxidants and make up 2-3% of the water-soluble solids from tea leaves. In this paper, the conditions necessary for hydrolysing and analysing flavonols in tea leaves and tea infusions are optimised and an isocratic elution system for the determination of the hydrolysed flavonols by high-performance liquid chromatography is presented. Aqueous ethanol was selected as the best solution for hydrolysing flavonoids in tea leaves. The contents of flavonols on a dry weight base in green tea leaves ranged from 0.83-1.59, 1.79-4.05, and 1.56-3.31 g/kg, and in black tea leaves from 0.24-0.52, 1.04-3.03, and 1.72-2.31 g/kg for myricetin, quercetin, and kaempferol, respectively. It was observed that the particle size of ground tea leaves significantly influenced the yield of flavonols. The contents of flavonols in different green tea infusions are given.

Record 99
AU: Nixon,-D.J.; Burgess,-P.J.; Sanga,-B.N.K.; Carr,-M.K.V.
TI: A comparison of the responses of mature and young clonal tea to drought.
SO: Exp-agric. Cambridge : Cambridge University Press. July 2001. v. 37 (3) p. 391-402.
AB: To assist commercial producers with optimizing the use of irrigation water, the responses to drought of mature and young tea (Camellia sinensis) crops (22 and 5 years after field planting respectively) were compared using data from two adjacent long-term irrigation experiments in southern Tanzania. Providing the maximum potential soil water deficit was below about 400-500 mm for mature, and 200-250 mm for young plants (clone 6/8), annual yields of dry tea from rainfed or partially irrigated crops were similar to those from the corresponding well-watered crops. At deficits greater than this, annual yields declined rapidly in young tea (up to 22 kg ha(-1) mm(-1)) but relatively slowly in mature tea (up to 6.5 kg ha(-1) mm(-1)). This apparent insensitivity of the mature crop to drought was principally due to compensation during the rains for yield lost in the dry season. Differences in dry matter distribution and shoot:root ratios contributed to these contrasting responses. Thus, the total above-ground dry mass of well-irrigated, mature plants was about twice that for young plants. Similarly, the total mass of structural roots (>1 mm diameter) to 3 m depth was four times greater in the mature crop than in the young crop and, for fine roots (<1 mm

diameter), eight times greater. The corresponding shoot:root ratios (dry mass) were about 1:1 and 2:1 respectively. In addition, each unit area of leaf in the canopy of a mature plant had six times (by weight) more fine roots available to extract and supply water than did a young plant. These results show that young tea should be irrigated in preference to mature tea, especially where the maximum soil water deficit is likely to exceed 250 mm.

Record 100
AU: Ng'etich,-W.K.; Stephens,-W.; Othieno,-C.O.
TI: Responses of tea to environment in Kenya. 3. Yield and yield distribution.
SO: Exp-agric. Cambridge : Cambridge University Press. July 2001. v. 37 (3) p. 361-372.
AB: In an experiment on genotype x environment interactions in tea (Camellia sinensis), yield differed between the genotypes at all sites. The highest yield in the third year after planting was 3760 kg ha(-1) for clone S15/10 at site 4 (1800 m altitude), while the lowest was 1610 kg ha(-1) for clone 6/8 at site 1 (2200 m). The dry matter contents of harvested shoots from each clone ranged from 0.24 for clone TN14-3 down to 0.19 for clone S15/10. Yield response to soil water deficits was more pronounced at site 4, where larger deficits were observed. Hail damage affected the yield of two sites and a temperature influence on recovery was evident.

Record 101
AU: Ng'etich,-W.K.; Stephens,-W.
TI: Responses of tea to environment in Kenya. 2. Dry matter production and partitioning.
SO: Exp-agric. Cambridge : Cambridge University Press. July 2001. v. 37 (3) p. 343-360.
AB: In a genotype x environment experiment at four sites with four tea (Camellia sinensis) clones in Kericho, Kenya, differences in ground cover and total dry matter production and partitioning were found between clones and between sites. The major contributor to these differences was the daily intercepted solar radiation that differed by as much as 30% between sites. Differences in radiation use efficiency (RUE) between the sites were small, but varied from 0.3 to 0.45 g MJ(-1) between the clones. The rate of dry matter production was affected by the prevailing weather conditions. During the dry seasons the rate of dry matter production differed between the sites and clones by a maximum of 2 g m(-2) d(-1). Harvest indices were found to vary between the sites and increased with time. Partitioning to harvested shoots ranged from 10% for clone TN14-3 to a maximum of 19% in clone S15/10 at site 4. Partitioning to roots showed distinct differences between clones, being least in clone S15/10 (10-20%) compared with 15-32% in other clones. Rooting depths were greatly influenced by the prevailing temperatures.

Record 102
AU: Ng'etich,-W.K.; Stephens,-W.
TI: Responses of tea to environment in Kenya. 1. Genotype x environment interactions for total dry matter production and yield.
SO: Exp-agric. Cambridge : Cambridge University Press. July 2001. v. 37 (3) p. 333-342.
AB: Dry matter production and yield of tea were recorded in a genotype x environment interaction experiment with four tea clones planted at four sites at a range of altitudes in Kericho, Kenya. Large responses to environment in dry matter production and yield were found. After 34 months from planting, the total plant dry matter production ranged from 18 to 22 t ha(-1) across the sites. One clone, TN14-3, produced the most dry matter, reaching 29 t ha(-1) at the lowest altitude, while clone S15/10 produced the least (15 t ha(-1)). Analysis of genotype x environment interactions showed that clone TN14-3 was above average stability in dry matter production across the four sites, but below average in yield. Clone S15/10 showed above average stability for tea yield, but was below average in dry matter production.

Record 103
AU: Dubick,-M.A.; Omaye,-S.T.
TI: Evidence for grape, wine and tea polyphenols as modulators of atherosclerosis and ischemic heart disease in humans.
SO: J-nutraceuticals-funct-med-foods. Binghamton, NY : Pharmaceutical Products Press, an imprint of the Haworth Press, Inc., c1997-. 2001. v. 3 (3) p. 67-93.

Record 104
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacbitou'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Apr 24, 2001. (11,838) 2 p.
AB: Abstract: A hybrid tea rose plant having dark green, glossy disease-resistant foliage on a vigorous, upright but compact plant having large, yellow and pink blend fragrant flowers.

Record 105
AU: Wachira,-F.; Tanaka,-J.; Takeda,-Y.
TI: Genetic variation and differentiation in tea (Camellia sinensis) germplasm revealed by RAPD and AFLP variation.
SO: J-hortic-sci-biotech. Ashford, Kent, England : Headley Brothers Ltd., [1998-. Sept 2001. v. 76 (5) p. 557-563.

Record 106
AU: Park,-D.J.; Imm,-J.Y.; Ku,-K.H.
TI: Improved dispersibility of green tea powder by microparticulation and formulation.
SO: J-food-sci. Chicago, Ill. : Institute of Food Technologists. Aug 2001. v. 66 (6) p. 793-798.
AB: Green tea powder was microparticulated and subsequently formulated with glucose and water. The sedimentation volume of green tea powder was effectively reduced by decreasing mean particle dia to less than 10 micrometer. The microstructure of formulated green tea indicated that glucose served as a core material, and green tea powder was attached to the surface of the glucose particles. The formulated green tea powder was instantly dispersed in cold (4 degrees C) water or milk even in the unstirred state. The optimum formulation ratio based on sensory quality and microstructure was 1:1.5 (green tea powder:glucose).

Record 107
AU: Quarles,-W.
TI: Compost tea for organic farming and gardening.
SO: IPM-pract. Berkeley, CA : Bio-Integral Resource Center,. Sept 2001. v. 23 (9) p. 1-8.

Record 108
AU: Goel,-B.; Pant,-D.C.; Kishore,-V.V.N.
TI: Two-phase anaerobic digestion of spent tea leaves for biogas and manure generation.
SO: Bioresour-technol. Oxford, U.K. : Elsevier Science Limited. Nov 2001. v. 80 (2) p. 153-156.
AB: Anaerobic digestion of spent tea leaves from an instant tea manufacturing factory was studied in a two-phase digester. The hydrolysis and acidification phase resulted in the formation of high organic strength liquid called leachate, with a chemical oxygen demand (COD) of 12,880 mg/l, within the retention time of 10 days. The leachate was tested in a batch methanaogensis reactor for biogas production. An average biogas yield of 0.48 m3/kg of COD destroyed was obtained with an average COD reduction of 93%. The biogas was analyzed for 73% methane content.

Record 109
AU: Hu,-Q.; Xu,-J.; Pan,-G.
TI: Effect of selenium spraying on green tea quality.
SO: J-sci-food-agric. West Sussex : John Wiley & Sons Limited. Nov 2001. v. 81 (14) p. 1387-1390.
AB: This research was conducted to determine the effects of different selenium treatments on the sensory and chemical qualities of green tea harvested in the summer tea-producing season. Green tea was produced from fresh tea leaves sprayed with sodium selenite or organically bound selenium solution. The results showed that the sweetness and aroma of green tea extracts were significantly increased and the astringent taste and bitterness were significantly reduced by selenium spraying during the summer tea-producing season. Significant differences in astringent taste, bitterness and sweetness of green tea extracts were found between sodium selenite and organically bound selenium treatments. The total amino acid and vitamin C contents of green tea were significantly increased and the ratio of polyphenols and amino acids was significantly decreased by selenium spraying. The vitamin C content of green tea during storage was more stable as a result of selenium treatment. No significant difference was found between sodium selenite and organically bound selenium treatments. These results demonstrate that the sensory and chemical qualities of green tea were significantly improved by selenium spraying.

Record 110
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jackisca'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Feb 13, 2001. (11,776) 2 p.
AB: Hybrid tea rose plant having high production of red flowers on medium long stems having a long vase life; vigorous, upright growth; and resistance to powdery mildew.

Record 111
AU: Zary,-K.W.
TI: Hybrid tea rose plant named 'Jacavirt'.
SO: US-pat-Plant. [Washington, D.C. : U.S. Patent and Trademark Office, 1976-. Feb 13, 2001. (11,775) 2 p.
AB: Hybrid tea rose plant having a deep red flower; large bud; glossy, disease resistant foliage; and strong, upright growth.

Record 112
AU: Sava,-V.M.; Yang,-S.M.; Hong,-M.Y.; Yang,-P.C.; Huang,-G.S.
TI: Isolation and characterization of melanic pigments derived from tea and tea polyphenols.
SO: Food-chem. Oxford : Elsevier Science Limited. May 2001. v. 73 (2) p. 177-184.
AB: The dark brown pigments derived from tea and tea polyphenols were studied. Physical and chemical properties revealed that pigments directly extracted from tea leaves and derived from tea polyphenols were similar to typical melanins. Further investigation showed that both melanic pigments possessed similar antioxidant capability, due to their chelating and scavenging properties. The inhibitory effect of melanic pigments, either from tea or tea polyphenols, was significantly stronger than that of non-treated tea polyphenols. According to these properties, we have extracted melanin from tea. In addition, oxidation of tea polyphenols also provided an alternative method to maximize the yields. The extracted melanin is an antioxidant, which interrupted free radical reactions at a step in the development chain by its scavenging properties and, at the step of initiation, by its ability to chelate metals.

Record 113
AU: Berger,-S.J.; Gupta,-S.; Belfi,-C.A.; Gosky,-D.M.; Mukhtar,-H.

TI: Green tea constituent (-)-epigallocatechin-3-gallate inhibits topoisomerase I activity in human colon carcinoma cells.
SO: Biochem-biophys-res-commun. Orlando, Fla. : Academic Press. Oct 19, 2001. v. 288 (1) p. 101-105.

Record 114
AU: Nakata,-M.; Fukushima,-A.; Ohkawa,-H.
TI: A monoclonal antibody-based ELISA for the analysis of the insecticide flucythrinate in environmental and crop samples.
SO: Pest-manag-sci. West Sussex, UK : Wiley, c2000-. Mar 2001. v. 57 (3) p. 269-277.
AB: A competitive enzyme-linked immunosorbent assay (ELISA) has been developed for the detection of the insecticide flucythrinate in environmental and food samples. Two types of haptens, the acid moiety that is the hydrolyzed product of flucythrinate, and the carboxylated propyl derivative of the alcohol moiety, were used to prepare monoclonal antibodies (MAbs). Five MAbs, which raised against the former hapten, were reactive with flucythrinate. Among them, MAb F1A27-4 showed the highest activity toward flucythrinate, and did not cross-react with other pyrethroids such as cycloprothrin, fenvalerate, fluvalinate, etofenprox and silafluofen. The assay conditions of indirect competitive ELISA with MAb F1A27-4 were studied to optimize the detection of flucytrinate in environmental and food samples. Incubation at 4 degrees C in the assay buffer, pH 8, with 300 mM sodium chloride improved the sensitivity. The addition of rabbit serum albumin or rabbit antiserum and the presence of 50 ml litre(-1) of methanol reduced matrix effects of the samples. Under optimized conditions, the ELISA detected flucythrinate spiked in water, soil, and extracts of apple and tea samples down to 10 mg litre(-1), 0.2 mg litre(-1), 0.3 mg litre(-1) and 0.3 mg litre(-1), respectively. The mean recovery and CV ranged from 91% to 120% and from 5% to 12%, respectively. The ELISA results in apple samples correlated well with those from LC-MS analysis (r2 = 0.99, n = 12).

Record 115
AU: Shanker,-A.; Sood,-C.; Kumar,-V.; Ravindranath,-S.D.
TI: A modified extraction and clean-up procedure for the detection and determination of parathion-methyl and chlorpyrifos residues in tea.
SO: Pest-manag-sci. West Sussex, UK : Wiley, c2000-. May 2001. v. 57 (5) p. 458-462.
AB: Recent advances in methodology and instrumentation have made possible the detection and determination of pesticides at microgram kg(-1) (ppb) levels. The sensitivity of a method of analysis depends greatly on the efficient extraction of the pesticide and the subsequent clean-up of the extract. The extract from green tea leaves is a mixture of aroma components, polyphenols and caffeine. The preparation of made tea from green tea leaves adds to this complexity by concentrating these coextractives. Conventional clean-up techniques provide poor recoveries for parathion-methyl and chlorpyrifos from both green tea leaves and made tea. This arises from interference by caffeine during gas chromatography, as it has a similar retention time to the two pesticides and peaks overlap. A modification to the protocol based on a solvent partitioning process using dichloromethane and subsequent washing of the extracts with warm water removed the caffeine, and pigments were removed by column chromatography. Recoveries ranging from 80 to 90% were then obtained for both pesticides.

Record 116
AU: Katiyar,-S.K.; Afaq,-F.; Azizuddin,-K.; Mukhtar,-H.
TI: Inhibition of UVB-induced oxidative stress-mediated phosphorylation of mitogen-activated protein kinase signaling pathways in cultured human epidermal keratinocytes by green tea polyphenol (-)-epigallocatechin-3-gallate.
SO: Toxicol-appl-pharmacol. Orlando, Fla. : Academic Press. Oct 15, 2001. v. 176 (2) p. 110-117.

Record 117

AU: Robb,-C.S.; Brown,-P.R.
TI: Catechins in tea: chemistry and analysis.
SO: Adv-chromatogr. New York : M. Dekker, 1965-. 2001. v. 41 p. 379-410.

Record 118
AU: Benson,-L.L.; Lamboy,-W.F.; Zimmerman,-R.H.
TI: Molecular identification of Malus hupehensis (tea crabapple) accessions using simple sequence repeats.
SO: HortScience. Alexandria, Va. : The American Society for Horticultural Science. Aug 2001. v. 36 (5) p. 961-966.
AB: The U.S. National Plant Germplasm System (NPGS) currently holds 36 separate accessions of the 'Yichang' clone of Malus hupehensis (Pamp.) Rehd. The 'Yichang' clone originally entered the United States in 1908 as seed collected for the Arnold Arboretum by E.H. Wilson near Yichang, Hubei Province, China. The original description of M. hupehensis omits fruit characters, and botanists frequently augment these omissions with descriptions of the 'Yichang' clone. Apomixis occurs in Malus, including M. hupehensis, and is strongly associated with elevated ploidy levels. Simple sequence repeats (SSRs) were used to characterize 65 accessions of M. hupehensis. To check for polyploidy, a set of M. hupehensis accessions was evaluated with flow cytometry. The simple sequence repeat phenotypes and ploidy information revealed the 'Yichang' clone under various accession names in arboreta. It was neither known nor suspected that the U.S. National Plant Germplasm System held many duplicate accessions of the 'Yichang' clone prior to their molecular characterization. Germplasm conservation decisions for Malus species can benefit from an increased knowledge of the genetic variation or lack thereof in naturalized populations and ex situ collections.

Record 119
AU: Jin,-C.; Yan,-Z.; Jianwei,-L.
TI: Processing procedures of brick tea and their influence on fluorine content.
SO: Food-chem-toxicol. Oxford, U.K. : Elsevier Science Ltd. Sept 2001. v. 39 (9) p. 959-962.

Record 120
AU: Du,-Q.; Jiang,-H.; Ito,-Y.
TI: Separation of theaflavins of black tea. High-speed countercurrent chromatography vs. Sephadex LH-20 gel column chromatography.
SO: J-liq-chromatogr-relat-technol. Monticello, NY : Marcel Dekker, Inc. 2001. v. 24 (15) p. 2363-2369.

Record 121
AU: Long,-H.; Zhu,-Y.; Huang,-T.; Coury,-L.A.; Kissinger,-P.T.
TI: Identification and determination of polyphenols in tea by liquid chromatography with multi-channel electrochemical detection.
SO: J-liq-chromatogr-relat-technol. Monticello, NY : Marcel Dekker, Inc. 2001. v. 24 (8) p. 1105-1114.

Record 122
AU: Costa,-W.A.J.M.-de.; Atapattu,-A.M.L.K.
TI: Decomposition and nutrient loss from prunings of different contour hedgerow species in tea plantations in the sloping highlands of Sri Lanka.
SO: Agrofor-syst. Dordrecht, The Netherlands : Kluwer Academic Publishers. 2001. v. 51 (3) p. 201-211.

Record 123
AU: Langley-Evans,-S.
TI: Tea as a protective agent in cardiovascular health.
SO: Nutr-food-sci. Bradford, West Yorkshire, England : MCB University Press. Mar/June 2001. v. 31 (2/3) p. 75-78.

Record 124
AU: Cox,-S.D.; Mann,-C.M.; Markham,-J.L.
TI: Interactions between components of the essential oil of Melaleuca alternifolia.
SO: J-appl-microbiol. Oxford, U.K. : Blackwell Science Ltd. Sept 2001. v. 91 (3) p. 492-497.
AB: Aims: This study compared the antimicrobial activity of Melaleuca alternifolia (tea tree) oil with that of some of its components, both individually and in two-component combinations. Methods and Results: Minimum inhibitory concentration and time-kill assays revealed that terpinen-4-ol, the principal active component of tea tree oil, was more active on its own than when present in tea tree oil. Combinations of terpinen-4-ol and either gamma-terpinene or p-cymene produced similar activities to tea tree oil. Concentration-dependent reductions in terpinen-4-ol activity and solubility also occurred in the presence of gamma-terpinene. Conclusions: Non-oxygenated terpenes in tea tree oil appear to reduce terpinen-4-ol efficacy by lowering its aqueous solubility. Significance and Impact of the Study: These findings explain why tea tree oil can be less active in vitro than terpinen-4-ol alone and further suggest that the presence of a non-aqueous phase in tea tree oil formulations may limit the microbial availability of its active components.

Record 125
AU: Zeng,-Y.; Wang,-J.; Yang,-Z.; Shen,-S.; Wu,-L.; Chen,-X.; Meng,-J.
TI: The diversity and sustainable development of crop genetic resources in the Lancang River Valley.
SO: Genet-resour-crop-evol. Dordrecht, The Netherlands : Kluwer Academic Publishers, c1992-. June 2001. v. 48 (3) p. 297-306.
AB: This paper reviews the status of crop genetic resources in Yunnan province of China from 1978 to 1999. Results are presented of same research in the field of the diversity of cultivated and wild crop. Yunnan is one of the centre of origin or genetic diversity of more than 200 cultivated and wild crops. There are over 500 cultivated plants which account for over 80% of the total in China and more than 650 species of wild crops. In addition, there are more than 440 species of main wild flowers. According to our recently researches there are abundant species, subspecies and varieties of crop genetic resources in Yunnan Province. The Lancang River Valley is the richest genetic diversity centre of rice, maize, wheat, barley, buckwheat, legumes, ramie, sugarcane, vegetable, tea, actinidia and so on. For example, there are 59 varieties (including all varieties of Oryza sativa L. in China) in 5933 accession of Yunnan indigenous rice. The Lancang River Valley is one of the centre for genetic diversity of rice resources and a rich region for elite and rare rice resources of Yunnan, too. In order to protect the highly endangered crop genetic resources in the Lancang River Valley, it is necessary and very important to set up a collection, conservation, utilization and research system, enhancing their protection and utilization, in situ- and ex situ-conservation, farm management and sustainable production.

Record 126
AU: Lorenz,-M.W.; Kellner,-R.; Volkl,-W.; Hoffmann,-K.H.; Woodring,-J.
TI: A comparative study on hypertrehalosaemic hormones in the Hymenoptera: sequence determination, physiological actions and biological significance.
SO: J-insect-physiol. Oxford, U.K. : Elsevier Science Ltd. June 2001. v. 47 (6) p. 563-571.
AB: A new hypertrehalosaemic peptide (Tea-HrTH; pQLNFSTGWGG-NH2) was isolated from the corpora cardiaca (CC) of the sawfly Tenthredo arcuata. The hypertrehalosaemic peptides found in the CC of five Bombus species and the paper wasp Polistes fuscata were identical to the adipokinetic hormone II of the desert locust, Schistocerca gregaria (Scg-AKH-II). The hypertrehalosaemic peptides found in the yellowjacket Vespula vulgaris and the hornet Vespa crabro were identical to the adipokinetic hormone of the cricket, Gryllus bimaculatus (Grb-AKH). All species examined had a large storage crop which, when filled with

honey, held up to one-third of their total body weight. Overwintering queens of P. fuscata had large stores of carbohydrates and lipids in the abdomen, and were able to survive months of fasting. Workers of Bombus hortorum (bumble-bee), Apis mellifera (honey-bee) and V. vulgaris had little or no fat body. These species could fly as long as sugar was present in their crops, but they stopped flying as the carbohydrates in the crop disappeared. There was no significant increase in the haemolymph carbohydrate titres after injections of CC extracts or corresponding synthetic peptides into workers of B. hortorum or into males and females of T. arcuata. There was a moderate increase in haemolymph carbohydrate titres when these peptides were injected into overwintering queens of P. fuscata and into workers of V. crabro, both with significant amounts of fat body. However, well-fed V. vulgaris workers, with very little fat body, also responded to their own hypertrehalosaemic peptide.

Record 127
AU: Panchariya,-P.C.; Popovic,-D.; Sharma,-A.L.
TI: Modeling of desorption isotherm of black tea.
SO: Dry-technol. Monticello, N.Y. : Marcel Dekker, Inc. 2001. v. 19 (6) p. 1177-1188.

Record 128
AU: Chang,-C.J.; Chiu,-K.L.; Chen,-Y.L.; Yang,-P.W.
TI: Effect of ethanol content on carbon dioxide extraction of polyphenols from tea.
SO: J-food-compos-anal. Orlando, Fla. : Academic Press. Feb 2001. v. 14 (1) p. 75-82.
AB: This study presents a novel packed-column extractor coupled with an absorption system to improve the quality of oleoresin oils for Oolong and green teas, extracted by using carbon dioxide. The effect of various co-solvents on the extract is also examined. In addition, gravimetrical measurement and HPLC chromatographic analysis individually determine the amount of oleoresin oil and the concentration of four major catechins. According to those results, the mean contents in the extract are 7.0- and 10.0-fold higher in an addition of 95% ethanol than in no addition for green tea and Oolong tea, respectively. The ratio of four major catechins to caffeine is the highest in Soxhlet ethanol extraction for both green and Oolong teas.

Record 129
AU: Skinner,-J.D.; Carruth,-B.R.
TI: A longitudinal study of children's juice intake and growth: the juice controversy revisited.
SO: J-Am-Diet-Assoc. Chicago, IL : The American Dietetic Association. Apr 2001. v. 101 (4) p. 432-437.
AB: Objectives: To determine associations between children's longitudinal juice intake and growth parameters at age 72 months and to determine children's beverage intake patterns over time. Subjects/setting: White children (n=72) residing in the vicinity of a Southern US city participated in a longitudinal study. Methods: Seven in-home interviews were conducted per child when each child was between 24 and 72 months of age. The 7 sets of 3-day dietary data were analyzed for beverage intake, categorized as juice (100% juice only), milk, carbonated beverages, and other drinks (eg, lemonade, tea, juice drinks). The following growth parameters were determined for each child at age 72 months: height, weight, body mass index (measured as kg/m(2)), and ponderal index (measured as kg/m(3)); the 3 latter are measures of overweight. Statistical analyses: Associations between longitudinal juice intake and each growth parameter were tested with general linear models. Repeated measures analysis of variance tested changes in beverage intakes over time. Results: There were no statistically significant associations between juice and children's height, weight, or body mass index, as tested by general linear models. Children's longitudinal juice intake was negatively related to ponderal index (beta=0.065, P=.050). Children's juice intake decreased significantly between ages 2 and 6

years, from 6.8 to 3.6 oz/day (P=.0001); intakes of carbonated beverages and other drinks increased from 1.7 to 3.8 oz/day (P=.0016) and from 2.7 to 6.2 oz/day (P=.0001), respectively. Applications/conclusions: Children's longitudinal juice intake was not associated with either short stature or overweight. As juice consumption.
decreased, intakes of less nutritious beverages increased. Consumption of 100% juices should be encouraged by health professionals and parents/caregivers.

Record 130
AU: Yuan,-L.M.; Zi,-M.; Ai,-P.; Chen,-X.X.; Li,-Z.Y.; Fu,-R.N.; Zhang,-T.Y.
TI: Versatile two-phase solvent system for alkaloid separation by high-speed counter-current chromatogaphy.
SO: J-chromatogr-A. Amsterdam ; New York : Elsevier, 1993-. Aug 24, 2001. v. 927 (1/2) p. 91-96.

Record 131
AU: Gilgen,-D.; Mascie-Taylor,-C.G.N.
TI: The effect of weekly iron supplementation on anaemia and on iron deficiency among female tea pluckers in Bangladesh.
SO: J-hum-nutr-diet. Oxford : Blackwell Science Ltd. June 2001. v. 14 (3) p. 185-190.
AB: Aim: To investigate the effect of weekly iron supplementation on anaemia and iron deficiency among adult, female tea pluckers. Method: A randomized double-blind intervention trial was conducted in a tea estate in Bangladesh where a total of 280 women received either weekly iron supplementation (200 mg ferrous fumarate and 200 mg folic acid) for 24 weeks or a matching placebo. Capillary blood samples were drawn at baseline and post-trial to determine haemoglobin, haematocrit and ferritin concentration. Mean corpuscular haemoglobin concentration (MCHC) was calculated using the haemoglobin and haematocrit values. Results: The mean haemoglobin concentration in the supplemented group increased by 5.52 g L-1 over the study period, on average, while ferritin values decreased by 0.33 microgram L-1. The control group showed a decrease in both mean haemoglobin (-0.24 g L-1) and ferritin (-5.32 microgram L-1). Those individuals in the supplemented group with the lowest pretrial haemoglobin and ferritin values experienced the greatest improvements post-trial, whereas nonanaemic individuals showed a decrease in both haemoglobin and ferritin concentrations. A total of 62.2% of women in the supplemented group reported feeling better and more energetic compared to 51.1% in the placebo group; 14.4% of the supplemented group and 22.7% of the control group complained about side-effects. Conclusion: Weekly iron supplementation was logistically simpler and cheaper than daily supplementation but would have to be continued on a longer term basis in order to combat both anaemia and iron deficiency.

Record 132
AU: Hemalatha,-K.; Venugopal,-N.B.K.; Rao,-B.S.
TI: Determination of azadirachtin in agricultural matrixes and commercial formulations by enzyme-linked immunosorbent assay.
SO: J-AOAC-Int. Gaithersburg, MD : AOAC International. July/Aug 2001. v. 84 (4) p. 1001-1010.
AB: An enzyme-linked immunosorbent assay (ELISA) was developed for azadirachtin (aza), a biopesticide from the neem tree (Azadirachta indica A. Juss). The immunogen was synthesized by epoxidation using the furan ring in the aza molecule. Rabbits were immunized with either bovine serum albumin (BSA)-azadirachtin or ovalbumin (OA)-azadirachtin conjugate. Evaluation of the antisera by antibody capture assay showed that the antibody titer of antisera raised against OA-aza was 1:30000. An indirect competitive ELISA was developed with BSA-azadirachtin as coating antigen and aza-specific antibodies raised against OA-aza immunogen. The immunoassay showed an inhibitory concentration (IC50) value of 75 ppb, with a range of detection from 0.5 to 1000 ppb for azadirachtin [based on regression analysis, y = 85.87 (-18.89x); r2 = -0.97]. Cross-reactivity of the antibodies with 2 aza-derivatives (22,23-dihydro-23beta-

methoxy azadirachtin and 3-tigloylazadirachtol) was 33 and 29%, respectively. The indirect competitive ELISA was validated and evaluated by quantitating aza in spiked agricultural commodities and from neem formulations. Azadirachtin was spiked into 5 different agricultural commodities: tomato, brinjal, coffee, tea, and cotton seed at 500 and 1000 ppb and recovered at 62-100%. In samples drawn from 6 lots, the aza content in neem-seed kernels ranged from 0.1 to 0.15%; in commercial neem formulations the content ranged from 200 to 2000 ppm. The method developed may be applied to environmental monitoring of aza and quality assurance studies of aza-based commercial formulations.

Record 133
AU: Yoshii,-K.; Kaihara,-A.; Tsumura,-Y.; Ishimitsu,-S.; Tonogai,-Y.
TI: Simultaneous determination of residues of emamectin and its metabolites, and milbemectin, ivermectin, and abamectin in crops by liquid chromatography with fluorescence detection.
SO: J-AOAC-Int. Gaithersburg, MD : AOAC International. May/June 2001. v. 84 (3) p. 910-917.
AB: A liquid chromatographic (LC) method was developed for the determination of emamectin and its metabolites (8,9-Z-isomer, N-demethylated, N-formylated, and N-methylformylated emamectin) in various crops. The analytes were extracted with acetone, cleaned up on cartridge columns (C18 and NH2), derivatized with trifluoroacetic anhydride and 1-methylimidazole, and determined by LC with fluorescence detection. Because radish inhibited the formation of the fluorescent derivatives, an additional Bond Elut PRS cartridge was used in the cleanup of Japanese radish samples. During sample preparation, N-formylated emamectin partially degraded to emamectin B(1b) and emamectin B(1a), and the 8,9-Z-isomer partially degraded to N-demethylated emamectin. Therefore, emamectin and its metabolites were determined as total emamectin, i.e., their sum was estimated as emamectin benzoate. Their recoveries from most crops were approximately 80-110% with the developed method. The detection limits for the analytes in vegetables were 0.1-0.3 parts per trillion (ppt). The results for these compounds were confirmed by LC/mass spectrometry (LC/MS; electrospray ionization mode). Because the fluorescent derivative of emamectin was undetectable by LC/MS, the results for the analyte were confirmed by using a sample solution without derivatization. Limits of detection by LC/MS were similar to the fluorescence detection limits, 0.1-0.3 ppt in vegetables. In addition to the emamectins, milbemectin, ivermectin, and abamectin were also determined by the developed method.

Record 134
AU: Chen,-Z.Y.; Wang,-S.; Lee,-K.M.S.; Huang,-Y.; Ho,-W.K.K.
TI: Preparation of flavanol-rich green tea extract by precipitation with AlCl(3).
SO: J-sci-food-agric. West Sussex : John Wiley & Sons Limited. Aug 2001. v. 81 (10) p. 1034-1038.
AB: The aim of this study was to use AlCl3 in the extraction of green tea flavanols (GTFs) from longjing green tea and examine the factors that influence the yield of GTF extract. Dry tea leaves were soaked in hot distilled water and the infusion was obtained by filtration. To the tea infusion, varying amounts of AlCl3 were added, causing precipitation of GTFs. After adjusting the pH to 4.0-6.5 and centrifugation, the yellow precipitate was collected. Sulphuric acid solution (40%) was then used to dissolve the GTFs from the yellow precipitate. The GTF solution was extracted using an equal volume of ethyl acetate. After the removal of ethyl acetate using a rotary evaporator, the GTF extract was redissolved in distilled water and the whole process was repeated. The resulting GTF extract was freeze-dried. It was found that the amount of AlCl3 used and the pH and temperature of the precipitation mixture significantly affected the yield and purity of GTF extract. A yield of 9.6 g extract per 100 g dry tea leaves with GTFs > 94% could be obtained if AlCl3 was used in the ratio of 15 g per 100 g equivalent dry tea leaves and the pH of the precipitation mixture was adjusted to 5.5 at 30 degrees C.

Record 135
AU: Sudoi,-V.; Khaemba,-B.M.; Wanjala,-F.M.E.
TI: Nitrogen fertilization and yield losses of tea to red crevice mite (Brevipalpus phoenicis geijskes) in the Eastern Highlands of Kenya.
SO: Int-j-pest-manag. London : Taylor & Francis Ltd., 1993-. July/Sept 2001. v. 47 (3) p. 207-210.

Record 136
AU: Park,-J.W.; Choi,-Y.J.; Suh,-S.I.; Kwon,-T.K.
TI: Involvement of ERK and protein tyrosine phosphatase signaling pathways in EGCG-induced cyclooxygenase-2 expression in raw 264.7 cells.
SO: Biochem-biophys-res-commun. Orlando, Fla. : Academic Press. Aug 31, 2001. v. 286 (4) p. 721-725.

Record 137
AU: Johansen,-C.A.; Hurk,-A.F.-van-den.; Pyke,-A.T.; Zborowski,-P.; Phillips,-D.A.; Mackenzie,-J.S.; Ritchie,-S.A.
TI: Entomological investigations of an outbreak of Japanese encephalitis virus in the Torres Strait, Australia, in 1998.
SO: J-med-entomol. Lanham, Md. : The Entomological Society of America. July 2001. v. 38 (4) p. 581-588.
AB: Japanese encephalitis (JE) virus first appeared in Australia in 1995, when three clinical cases (two fatal) were diagnosed in residents on Badu Island in the Torres Strait, northern Queensland. More recently, two confirmed human JE cases were reported in the Torres Strait Islands and Cape York Peninsula, in northern Queensland in 1998. Shortly after JE virus activity was detected in humans and sentinel pigs on Badu Island in 1998, adult mosquitoes were collected using CO2 and octenol-baited CDC light traps; 43 isolates of JE virus were recovered. Although Culex sitiens group mosquitoes yielded the majority of JE isolates (42), one isolate was also obtained from Ochlerotatus vigilax (Skuse). Four isolates of Ross River virus and nine isolates of Sindbis (SIN) virus were also recovered from members of the Culex sitiens group collected on Badu Island in 1998. In addition, 3,240 mosquitoes were speciated and pooled after being anesthetized with triethylamine (TEA). There was no significant difference in the minimum infection rate of mosquitoes anesthetized with TEA compared with those sorted on refrigerated tables (2.8 and 1.6 per 1,000 mosquitoes, respectively). Nucleotide analysis of the premembrane region and an overlapping region of the fifth nonstructural protein and 3' untranslated regions of representative 1998 Badu Island isolates of JE virus revealed they were identical to each other. Between 99.1% and 100% identity was observed between 1995 and 1998 isolates of JE from Badu Island, as well as isolates of JE from mosquitoes collected in Papua New Guinea (PNG) in 1997 and 1998. This suggests that the New Guinea mainland is the likely source of incursions.
of JE virus in Australia.

Record 138
AU: Wu,-M.C.; Huang,-C.J.
TI: Inhibition of prostaglandin E2 production of a macrophage cell line by some phytochemicals.
SO: Food-sci-agri-chem. Taipei, Taiwan : Chinese Institute of Food Science and Technology : Chinese Agricultural Chemical Society, [1999-. June 2001. v. 3 (2) p. 59-71.
AB: Prostaglandin E2 is a well-known proinflammatory mediator and promoter of some tumors. To test the potentially anti-inflammatory activity of some phytochemicals commonly found in foods, an in vitro cell culture model using a macrophage cell line RAW264.7 was employed. The PGE2 production in RAW264.7 cells stimulated by LPS was dose-dependently inhibited by apigenin, curcumin, resveratrol, naringenin and quercetin with an IC50 of 1.9, 9.7, 13.9, 36.7 and 23.3 micromolar, respectively. Some green tea polyphenols, including, (-) epicatechin (-EC), (+/-) catechin, (-) epigallocatechin gallate (-EGCG) and (-)

epicatechin gallate (-ECG), also inhibited PGE2 production of RAW264.7 cells stimulated by LPS, while (+) EC and (-) epigallocatechin (-EGC) did not. The IC50 were 11.3 micromolar for (-) EGCG, 39.1 micromolar for (-) ECG, 151 micromolar for (-) EC and 321 micromolar for (+/-) catechin. Ascorbic acid exerted a weak inhibition while beta-carotene was not effective. The inhibitory effect was not accompanied by a significant change in COX-2 protein expression, as revealed by Western blot analysis. The water (WE) and ethyl acetate (EAE) extract of onion, a rich source of quercetin, also showed an inhibitory effect on PGE2 production. On the other hand, WE of celery, a rich source of apigenin, enhanced PGE2 production in the absence of LPS, and EAE of celery also enhanced PGE2 production in the presence of LPS. The anti-inflammatory activity of phytochemicals in foods merits further studies to help those suffered from chronic inflammation to ameliorate their inflammatory conditions by a proper selection of foods.

Record 139
AU: Gulliford,-M.C.; Ukoumunne,-O.C.
TI: Determinants of glycated haemoglobin in the general population: associations with diet, alcohol and cigarette smoking.
SO: Eur-j-clin-nutr. Basingstoke : Stockton Press. July 2001. v. 55 (7) p. 615-623.
AB: Objective: We evaluated cigarette smoking, alcohol intake and consumption of different foods as determinants of glycated haemoglobin in a general population sample. Design: Cross-sectional survey. Setting: England. Subjects: Representative sample of 15 809 adults aged 16 y and older. Data analysed for 9772 non-diabetic, white European subjects. Main outcome measures: Glycated haemoglobin (GHb). Analyses were adjusted for age, sex, body mass index (BMI), waist-hip circumference ratio, activity level, and educational attainment. Results: After adjusting for confounding, GHb was 0.277% (95% confidence interval 0.218 to 0.336) higher in current smokers of 20 or more per day, compared with non-smokers. GHb was 0.189% (0.101 to 0.277) lower in those drinking 42 or more units of alcohol per week than in non-drinkers. GHb was not associated with frequency of consumption of pulses, fruit, vegetables and salads, cakes, bread or confectionery. GHb was higher in subjects who took sugar in tea (0.051%, 0.015 to 0.087%) or in coffee (0.069%, 0.034 to 0.105%). GHb was higher in subjects who used solid fat for cooking (0.082%, 0.022 to 0.142%), or who drank whole rather than reduced-fat milk (0.088%, 0.036 to 0.140%), or used butter or hard margarine rather than low-fat spreads (0.075%, 0.029 to 0.121%). Conclusions: In the general population, higher GHb may be associated with cigarette smoking, or frequent consumption of fat-containing foods. Consumption of alcohol may be associated with lower GHb.

Record 140
AU: Monteiro,-M.H.D.; Gomes-Carneiro,-M.R.; Felzenszwalb,-I.; Chahoud,-I.; Paumgartten,-F.J.R.
TI: Toxicological evaluation of a tea from leaves of Vernonia condensata.
SO: J-ethnopharmacol. Oxford : Elsevier Science Ltd. Feb 2001. v. 74 (2) p. 149-157.

Record 141
AU: Du,-Q.Z.; Cheng,-H.; Ito,-Y.
TI: Separation of radioactive metabolites in cultured tea cells fed with [14C]phenylalanine using high-speed counter-current chromatography.
SO: J-chromatogr-A. Amsterdam ; New York : Elsevier, 1993-. July 6, 2001. v. 921 (2) p. 331-334.

Record 142
AU: Yang,-M.S.; Wong,-M.H.
TI: Changes in Ca, Cu, Fe, Mg, and Zn contents in mouse brain tissues after prolonged oral ingestion of brick tea liquor containing a high level of Al.

SO: Biol-trace-elem-res. Totowa, N.J. : Humana Press. Apr 2001. v. 80 (1) p. 67-76.

Record 143
AU: Yang,-M.H.; Wang,-C.H.; Chen,-H.L.
TI: Green, oolong and black tea extracts modulate lipid metabolism in hyperlipidemia rats fed high-sucrose diet.
SO: J-nutr-biochem. New York, N.Y. : Elsevier Science Inc. Jan 2001. v. 12 (1) p. 14-20.
AB: The main goal of this study was to compare effects of ethanol-soluble fractions prepared from various types of teas on sucrose-induced hyperlipidemia in 5-week old male Sprague-Dawley rats. Rats (n = 6-8 per group) weighed approximately 200 g were randomly divided into control diet, sucrose-rich diet, green tea, oolong tea and black tea groups. Control-diet group was provided with modified AIN-93 diet while the others consumed sucrose-rich diet. Tea extracts (1% w/v) were supplied in the drink for green tea, oolong tea and black tea groups. Results indicated sucrose-rich diet induced hypertriglyceridemia and hypercholesterolemia. Food intake was reduced by oolong tea extract. Consuming oolong and black tea extracts also significantly decreased body weight gains and food efficiency. Hypertriglyceridemia was normalized by green and black tea drink on day 18 and by oolong tea extract on day 25, respectively. Hypercholesterolemia was normalized by green tea on day 18 and by oolong tea and black tea on day 25, respectively. Plasma HDL-cholesterol concentrations were not affected by any tea extract. The triglyceride content in the liver as well as the cholesterol content in the heart of rats fed sucrose-rich diet were elevated and were normalized by all types of tea drink tested. Although green and oolong tea extracts contained similar composition of catechin, our findings suggest green tea exerted greater antihyperlipidemic effect than oolong tea. Apparent fat absorption may be one of the mechanisms by which green tea reduced hyperlipidemia as well as fat storage in the liver and heart of rats consumed sucrose-rich diet.

Record 144
AU: Stach,-D.; Schmitz,-O.J.
TI: Decrease in concentration of free catechins in tea over time determined by micellar electrokinetic chromatography.
SO: J-chromatogr-A. Amsterdam ; New York : Elsevier, 1993-. July 27, 2001. v. 924 (1/2) p. 519-522.

Record 145
AU: Sur,-P.; Chaudhuri,-T.; Vedasiromoni,-J.R.; Gomes,-A.; Ganguly,-D.K.
TI: Antiinflammatory and antioxidant property of saponins of tea [Camellia sinensis (L) O. Kuntze] root extract.
SO: PTR,-Phytother-res. West Sussex : John Wiley & Sons Ltd. Mar 2001. v. 15 (2) p. 174-176.

Record 146
AU: Terahara,-N.; Takeda,-Y.; Nesumi,-A.; Honda,-T.
TI: Anthocyanins from red flower tea (Benibana-cha), Camellia sinensis.
SO: Phytochemistry-Oxford. Oxford : Elsevier Science Ltd. Feb 2001. v. 56 (4) p. 359-361.
AB: Three anthocyanins were isolated from the leaves of red flower tea (Benibana-cha), Camellia sinensis, and their structures were determined by means of chemical and spectroscopic analyses. Two are the anthocyanins, delphinidin and cyanidin 3-O-beta-D-galactosides, respectively. Whereas the third, delphinidin 3-O-beta-D-(6-(E)-p-coumaryl)galactopyranoside. The anthocyanins were also contained in the flowers of Benibana-cha in different compositions.

Record 147
AU: Hollman,-P.C.H.
TI: Evidence for health benefits of plant phenols: local or systemic effects.

SO: J-sci-food-agric. West Sussex : John Wiley & Sons Limited. July 2001. v. 81 (9) p. 842-852.
AB: Plant phenols are mostly products of the phenylpropanoid pathway and comprise a large variety of compounds: cinnamic acids, benzoic acids, flavonoids, proanthocyanidins, stilbenes, coumarins, lignans and lignins. They are strong antioxidants and might prevent oxidative damage to biomolecules such as DNA, lipids and proteins which play a role in chronic diseases such as cancer and cardiovascular disease. Plant phenols may interfere with all stages of the cancer process, potentially resulting in a reduction of cancer risk. Only flavonols have been investigated in observational studies. Five out of seven studies showed an inverse association of flavonol intake with subsequent cardiovascular disease (CVD). A protective effect against cancer was only found in one out of four studies. Thus the epidemiological evidence does not yet allow a firm decision on the involvement of flavonols in the aetiology of either CVD or cancer. The epidemiology of flavonols points to a systemic effect. The epidemiology of tea, as a rich source of various phenols, shows inconsistent data for colon cancer, which also does not support a local effect of plant phenols. The absorption and bioavailability of plant phenols have been inadequately studied. Dietary flavonoids were thought to be poorly absorbed because of their presence as beta-glycosides (conjugates of sugars). However, conjugation with glucose enhanced human absorption. Flavonoids and other plant phenols are extensively metabolised by colonic bacteria: the ring structure is cleaved, giving a range of phenolic acids which are then absorbed. Human studies showed that only about 1% of a well-absorbed flavonoid was excreted with an intact flavonoid backbone into urine.
Major questions to be answered are whether the effective concentrations found in in vitro systems really reflect physiological concentrations.

Record 148
AU: Temple,-S.J.; Temple,-C.M.; Boxtel,-A.J.B.-van.; Clifford,-M.N.
TI: The effect of drying on black tea quality.
SO: J-sci-food-agric. West Sussex : John Wiley & Sons Limited. June 2001. v. 81 (8) p. 764-772.
AB: Drying is an important part of tea manufacture, where enzyme reactions in earlier phases are terminated by heat and moisture loss, and new compounds are produced by the action of heat. This work is an attempt to quantify the temperatures required to produce the desired changes without damage through exposure to excess heat. Experiments were carried out giving already-dried tea further heat exposure, drying tea from wet dhool in a thin layer, and drying a larger sample in a batch fluidized bed dryer. Temperatures in the range of 60-140 degrees C were used. Effects were monitored by commercial tasters, thin layer chromatography, reverse phase HPLC and size exclusion HPLC. Exposure to at least 80 degrees C was found to be necessary for quality development. For periods of less than 1 min, tea particle temperatures of up to 120 degrees C may be tolerated, but, in general, temperatures of 110 degrees C and above may be considered deleterious. Inlet air temperatures may be in excess of these values, but only while drying rates are high. The stewing phenomenon, cited by several authors, could not be found when drying times of less than 15 min were used.

Record 149
AU: Hayes,-D.
TI: Fluids for fitness.
SO: School-foodserv-nutr. Alexandria, VA : American School Food Service Association, c1994-. Mar 2001. v. 55 (3) p. 46-50.
AB: The need for adequate fluid intake is the topic of this article. It covers the functions of fluids in the body, how individuals can determine if they are dehydrated, and guidelines on when to drink and what to drink. Information on the benefits of tea are highlighted.

Record 150
AU: Sandal,-I.; Bhattacharya,-A.; Ahuja,-P.S.

TI: An efficient liquid culture system for tea shoot proliferation.
SO: Plant-cell,-tissue-organ-cult. Dordrecht, The Netherlands : Kluwer Academic Publishers. 2001. v. 65 (1) p. 75-80.
AB: The efficiency of thidiazuron in promoting tea shoot proliferation in liquid medium was evaluated. As compared to 6-benzyl adenine which induced hyperhydricity in the proliferated shoots in liquid medium, a progressive increase in the multiplication rate together with healthy shoot growth was achieved when thidiazuron (2.5 to 5.0 micromolar) was used instead of 6-benzyl adenine. Of the different liquid volumes compared in 250 ml Erlenmyer flasks, 20 ml was the most effective. While an increase in the multiplication rate coupled with normal but healthy shoots was observed under static and agitated conditions at this volume of liquid medium, hyperhydricity was induced in 50 ml liquid medium. Therefore, 20 ml static liquid medium with subculture periods at an interval six to eight weeks seems to be a cost and labour effective process as compared to the existing protocols involving solid media with subculture periods at 4 weeks interval.

Record 151
AU: Bowen,-K.L.; Roark,-R.S.
TI: Management of black spot of rose with winter fungicide treatment.
SO: Plant-dis. [St. Paul, Minn., American Phytopathological Society]. Apr 2001. v. 85 (4) p. 393-398.
AB: Fungicides were evaluated for their efficacy against black spot of rose, caused by Diplocarpon rosae, when applied during winter months to hybrid tea rose plants in two studies. One study, conducted at two Auburn University campus sites, consisted of applications of horticultural oil, chlorothalonil plus an antitranspirant, and cyproconazole, along with nontreated plants; one site included triforine applications. Rose canes were treated two and three times between late October and February in 1996-97 and 1997-98, respectively; then plants were examined every 2 to 4 days beginning in mid-February for onset of symptoms of black spot. In both years, winter applications of fungicides (chlorothalonil, cyproconazole, and triforine) delayed disease onset compared with treatments without fungicides (nontreated and oil applications). Decreased plant defoliation, as well as improved plant vigor, were observed through the 1998 growing season following fungicidal winter treatments at campus sites; winter treatments with oil did not suppress disease compared with no treatment. In a second study started in November 1997, at a site near Shorter, AL, three systemic fungicides (myclobutanil, cyproconazole, and triforine) were applied to rose canes during the winter; nontreated plants were included. Decreased disease symptoms and defoliation of rose plants were observed early in the 1998 and 1999 seasons following winter applications of cyproconazole and triforine compared with myclobutanil or nontreated plants. Winter treatments with these fungicides did not consistently provide season-long reduction of black spot. However, season-long plant vigor and flower production on plants were improved at the Shorter site.
following winter applications of any of the above systemic fungicides compared with nontreated plants.

Record 152
AU: Sarkar,-A.; Bhaduri,-A.
TI: Black tea is a powerful chemopreventor of reactive oxygen and nitrogen species: comparison with its individual catechin constituents and green tea.
SO: Biochem-biophys-res-commun. Orlando, Fla. : Academic Press. June 1, 2001. v. 284 (1) p. 173-178.

Record 153
AU: Bertoldi,-M.; Gonsalvi,-M.; Voltattorni,-C.B.
TI: Green tea polyphenols: novel irreversible inhibitors of Dopa decarboxylase.
SO: Biochem-biophys-res-commun. Orlando, Fla. : Academic Press. June 1, 2001. v. 284 (1) p. 90-93.

Record 154
AU: Record,-I.R.; Dreosti,-I.E.; McInerney,-J.K.
TI: Changes in plasma antioxidant status following consumption of diets high or low in fruit and vegetables or following dietary supplementation with an antioxidant mixture.
SO: Br-j-nutr. London, U.K. : CAB International. Apr 2001. v. 85 (4) p. 459-464.
AB: The aim of the present study was to examine the effect of consumption of a high-fruit and vegetable diet, or a spray-dried extract of selected fruits and vegetables of high antioxidant content, on indices of antioxidant status of individuals consuming a background diet with minimal antioxidant intake. Plasma antioxidant concentrations were determined in twenty-five men following a 2-week depletion period during which they consumed self-selected low-antioxidant diets (less than three servings of fruit and vegetables with no tea, coffee, red wine or fruit juice). Following this period the volunteers consumed either a self-selected diet containing five to seven servings of fruit and vegetables/d, or 30 g of a spray-dried supplement designed to provide the equivalent antioxidant activity of five to seven servings of fruit and vegetables for 2 weeks in a crossover trial. Following consumption of a high-antioxidant diet for 2 weeks, plasma concentrations of ascorbic acid, alpha- and beta-carotene and lutein+zeaxanthin were all significantly increased ($P < 0.05$) over the depletion period. However, concentrations of lycopene, retinol and tocopherol were not affected. Consumption of the supplement also raised the concentrations of these same antioxidants in plasma. Despite the increases in the concentrations of measured antioxidant nutrients, the 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid-equivalent antioxidant capacity of plasma, as estimated by inhibition of metmyoglobin activity, was not significantly affected by any of the dietary treatments.

Record 155
AU: Ma,-S.J.; Watanabe,-N.; Yagi,-A.; Sakata,-K.
TI: The (3R,9R)-3-hydroxy-7,8-dihydro-beta-ionol disaccharide glycoside is an aroma precursor in tea leaves.
SO: Phytochemistry-Oxford. Oxford : Elsevier Science Ltd. Apr 2001. v. 56 (8) p. 819-825.
AB: The disaccharide glycoside, (3R,9R)-3-hydroxy-7,8-dihydro-beta-ionyl 6-O-beta-D-apiofuranosyl-beta-D-glucopyranoside was isolated as an aroma precursor from the leaves of Camellia sinensis var. sinensis cv. Yabukita. Its stereochemistry was elucidated on the basis of spectral data and chemical synthesis.

Record 156
AU: Ananda,-J.; Herath,-G.; Chisholm,-A.
TI: Determination of yield and erosion damage functions using subjectively elicited data: application to smallholder tea in Sri Lanka.
SO: Aust-j-agric-resour-econ. Oxford, U.K. ; Malden, Mass. : Blackwell, 1997-. June 2001. v. 45 (2) p. 275-289.

Record 157
AU: Liao,-S.; Kao,-Y.H.; Hiipakka,-R.A.
TI: Green tea: biochemical and biological basis for health benefits.
SO: Vitam-horm. San Diego, Calif. : Academic Press. 2001. v. 62 p. 1-94.

Record 158
AU: Embola,-C.W.; Weisburger,-M.C.; Weisburger,-J.H.
TI: Green tea and the metabolism of 2-amino-3-methylimidazo[4,5-f]quinoline in F344 rats.
SO: Food-chem-toxicol. Oxford, U.K. : Elsevier Science Ltd. June 2001. v. 39 (6) p. 629-633.

Record 159

AU: Cao,-J.; Zhao,-Y.; Liu,-J.W.
TI: Prevention of brick tea fluorosis in rats with low-fluoride brick tea on laboratory observation.
SO: Food-chem-toxicol. Oxford, U.K. : Elsevier Science Ltd. June 2001. v. 39 (6) p. 615-619.

Record 160
AU: Tinkilic,-N.; Uyanik,-A.
TI: Spectrophotometric determination of the tannin contents of various Turkish black tea, beer and wine samples.
SO: Int-j-food-sci-nutr. Oxfordshire, UK. : Carfax Publishing. May 2001. v. 52 (3) p. 289-294.

Record 161
AU: Arts,-I.C.W.; Hollman,-P.C.H.; Feskens,-E.J.M.; Bueno-de-Mesquita,-H.B.; Kromhout,-D.
TI: Catechin intake and associated dietary and lifestyle factors in a representative sample of Dutch men and women.
SO: Eur-j-clin-nutr. Basingstoke : Stockton Press. Feb 2001. v. 55 (2) p. 76-81.
AB: Objective: To study the intake of catechins in the Dutch population and to assess the relation between catechin intake and other dietary factors. Catechins, dietary components that belong to the flavonoid family, potentially protect against chronic diseases such as cancer and cardiovascular diseases. Catechins are the major components of tea, but they are present in many other plant foods as well. Design: Data were used from a nationwide dietary survey carried out in 1998 among a representative sample of 6200 Dutch men and women aged 1-97 y. Dietary data were collected using a 2 day dietary record method. Results: The average daily catechin intake was 50 mg (s.d. 56 mg/day). Catechin intake increased with age, and the intake was higher in women (60 mg/day) than in men (40 mg/day). Tea was the main catechin source in all age groups, whereas chocolate was second in children, and apples and pears were second in adults and elderly. Catechin intake was lower in smokers than in non-smokers, and increased with socio-economic status. A high intake was associated with a high intake of fiber (r=0.20), vitamin C (r=0.17) and beta-carotene (r=0.10). Conclusions: Catechins are quantitatively important bioactive components of the daily diet, which should be taken into account when studying the relation between diet and chronic diseases. Catechin intake is only moderately associated with the intake of other nutrients, but much stronger with certain health behaviours such as smoking.

Record 162
AU: Hewitt,-B.
TI: Tea for two.
SO: Org-gard. [Emmaus, PA : Rodale Press, c1988-. July/Aug 2001. v. 48 (5) p. 32-35.

Record 163
AU: Wright,-L.P.; Aucamp,-J.P.; Apostolides,-Z.
TI: Analysis of black tea theaflavins by non-aqueous capillary electrophoresis.
SO: J-chromatogr-A. Amsterdam ; New York : Elsevier, 1993-. June 1, 2001. v. 919 (1) p. 205-213.

Record 164
AU: Fairweather-Tait,-S.J.; Wortley,-G.M.; Teucher,-B.; Dainty,-J.
TI: Iron absorption from a breakfast cereal: effects of EDTA compounds and ascorbic acid.
SO: Int-j-vitam-nutr-res. Bern : Hogrefe & Huber Publishers. Mar 2001. v. 71 (2) p. 117-122.
AB: Sodium iron ethylenediaminetetracetic acid (NaFeEDTA) has been recommended for food fortification programmes to improve iron status but its performance in

commercial products has not been evaluated. The effect of EDTA on iron absorption from fortified cornflakes, given as part of a typical Western breakfast, was determined in a double-blind randomised study with 20 non-anaemic female volunteers, using experimentally prepared iron compounds, enriched with 58Fe, and faecal monitoring. Five meals were compared: hydrogen reduced iron, hydrogen reduced iron plus Na2EDTA (molar ratio EDTA:Fe 1:2), hydrogen reduced iron plus NaFe(III)EDTA at two different molar ratios (EDTA:total Fe 1:3 and 1:2), and hydrogen reduced iron plus 15 mg ascorbic acid (ascorbic acid:Fe 1.3:1). The iron and EDTA compounds were accurately weighed into gelatine capsules and taken with unfortified cornflakes, semi-skimmed milk and tea on two consecutive days; the iron dose per meal was 3.75 mg. Iron absorption from all five test meals was measured in each volunteer with a minimum wash-out period of 2 weeks between tests. Geometric mean iron absorption (%) from the 5 tests was 14.1, 17.6, 20.6, 24.4 and 17.5 respectively (equivalent to 0.5-0.9 mg absorbed iron). There was a significantly higher iron absorption from the mixture of reduced iron and NaFe(III)EDTA (EDTA:Fe 1:2) than from reduced iron alone ($p = 0.014$). It is not known whether the higher absorption was from reduced iron or NaFeEDTA or both. Absorption was not increased significantly with NaFe(III)EDTA (EDTA:Fe 1:3), Na2EDTA (EDTA:Fe 1:2) or ascorbic acid (15 mg).

Record 165
AU: Christoph,-F.; Stahl-Biskup,-E.; Kaulfers,-P.M.
TI: Death kinetics of Staphylococcus aureus exposed to commercial tea tree oils s.l.
SO: J-essent-oil-res. Carol Stream, Ill. : Allured Publishing Corporation. Mar/Apr 2001. v. 13 (2) p. 98-102.
AB: Staphylococcus aureus cells were exposed to increasing concentrations of Australian tea tree oil, cajuput oil, niaouli oil, Lema oil, kanuka oil and manuka oil as well as of a beta-triketone complex isolated from manuka oil. The death kinetics were determined by calculation of log10 reduction factors after increasing exposure periods. Niaouli oil turned out to be highly active, followed by Lema (this is a registered trademark), tea tree and cajuput oils. Kill rate data indicated that 1.0% (v/v) were lethal to stationary phase cells in the assay conditions used. At 2.0% (v/v), niaouli oil and Lema oil yielded a complete 6.8 log10 reduction of cell numbers in suspensions within 60 min, whereas cells treated with tea tree and cajuput oils were inactivated more slowly within 120 min and 240 min, respectively. Kanuka oil and manuka oil as well as the beta-triketone complex, the active principle of manuka oil, lacked any bactericidal properties. Their high effectiveness against Gram-positive bacteria can be explained by bacteriostatic effects. The results obtained with Lema oil, a blend of tea tree oil and a polar fraction of manuka oil (mainly beta-triketones), gave cause to discuss synergistic effects.

Record 166
AU: Isogai,-E.; Isogai,-H.; Hirose,-K.; Hayashi,-S.; Oguma,-K.
TI: In vivo synergy between green tea extract and levofloxacin against enterohemorrhagic Escherichia coli O157 infection.
SO: Curr-microbiol. New York, N.Y. : Springer-Verlag New York, Inc. Apr 2001. v. 42 (4) p. 248-251.
AB: We studied the synergistic effects of Japanese green tea extract (JGTE) and levofloxacin (LVFX) against enterohemorrhagic Escherichia coli (EHEC) infection in a gnotobiotic mouse model. Mice fed on JGTE conferred a significant degree of protection against an oral challenge with EHEC. Complete elimination of the bacteria from the mice, was however, difficult. The combination of JGTE and LVFX increased the survival rate and reduced damage to target organs. Thus, dietary supplementation with JGTE improved the therapeutic effects of antibiotic treatment.

Record 167
AU: Craig,-S.A.S.; Holden,-J.F.; Khaled,-M.Y.

TI: Determination of polydextrose in foods by ion chromatography: collaborative study.
SO: J-AOAC-Int. Gaithersburg, MD : AOAC International. Mar/Apr 2001. v. 84 (2) p. 472-478.
AB: Eight collaborating laboratories assayed 7 blind duplicate pairs of foods for polydextrose content. The 7 test sample pairs ranged from low (2%) to high (95%) levels. The following foods were prepared with polydextrose mixed into the other ingredients and then baked, cooked, or otherwise prepared: milk chocolate candy, iced tea, sugar cookie, grape jelly, soft jellied candy, and powdered drink mix. Collaborators received a polydextrose standard to develop a calibration curve. The method determined polydextrose by ion chromatography, after removal of interfering food components (high molecular weight solubles). Repeatability standard deviations (RSD(r)) ranged from 3.93 to 9.04%; reproducibility standard deviations (RSD(R)) ranged from 4.48 to 14.06%. The average recovery was 94%.

Record 168
AU: Tode,-K.; Luthen,-H.
TI: Fusicoccin- and IAA-induced elongation growth share the same pattern of K+ dependence.
SO: J-exp-bot. Oxford : Oxford University Press. Feb 2001. v. 52 (355) p. 251-255.
AB: The dependence of growth induced by the fungal toxin fusicoccin (FC) on the K+ content of the incubation medium was investigated in abraded maize coleoptiles. If the divalent ion Ca2+ was included in the bathing medium, no FC-induced growth occurred in the absence of K+, whereas a strong response was detected in presence of K+. The optimal K+ concentration was in the range of 1-10 mM. With the exception of Rb+, none of the other alkali ions (Na+, Li+, Cs+) could replace for K+ in sustaining FC-induced growth. The potassium channel blocker tetraethylammonium (TEA) reversibly inhibited FC-induced growth. As shown earlier for auxin-induced growth, no strict potassium dependence of FC-triggered elongation was observed in Ca2+ -free media. However, TEA abolished this apparently K+ independent FC-induced growth. It is concluded that FC-induced growth, like auxin-induced growth, requires K+ uptake through K+ channels.

Record 169
AU: Ishihara,-N.; Chu,-D.C.; Akachi,-S.; Juneja,-L.R.
TI: Improvement of intestinal microflora balance and prevention of digestive and respiratory organ diseases in calves by green tea extracts.
SO: Livest-prod-sci. Amsterdam, The Netherlands : Elsevier Science. Mar 2001. v. 68 (2/3) p. 217-229.

Record 170
AU: Hu,-C.; Kitts,-D.D.
TI: Evaluation of antioxidant activity of epigallocatechin gallate in biphasic model systems in vitro.
SO: Mol-cell-biochem. Dordrecht, The Netherlands : Kluwer Academic Publishers. Feb 2001. v. 218 (1/2) p. 147-155.

Record 171
AU: Widmer,-R.; Roth,-M.; Hayton,-M.; Dernedde,-S.
TI: Hydropower revival in Java's tea gardens: rising fuel prices promote green energy for green tea.
SO: Mt-res-dev. Berkeley, Calif. : University of California Press. Feb 2001. v. 21 (1) p. 14-18.

Record 172
AU: Baumann,-D.; Adler,-S.; Hamburger,-M.
TI: A simple isolation method for the major catechins in green tea using high-speed countercurrent chromatography.

SO: J-nat-prod. Washington, D.C. : American Society of Pharmacognosy. Mar 2001. v. 64 (3) p. 353-355.

Record 173
AU: Singh,-D.; Singh,-M.
TI: Organization of 5S ribosomal RNA genes in tea (Camellia sinensis).
SO: Genome. Ottawa, Ontario, Canada : National Research Council of Canada. Feb 2001. v. 44 (1) p. 143-146.
AB: The 5S rRNA genes in the Camellia sinensis (L.) O. Kuntze (tea) genome are arranged as tandem repeat units of 300 and 325 bps. The 2 classes of tandem repeats were discovered by Southern hybridisation of tea genomic DNA with a 5S rRNA gene PCR product.

Record 174
AU: McCarthy,-T.L.; Kerry,-J.P.; Kerry,-J.F.; Lynch,-P.B.; Buckley,-D.J.
TI: Evaluation of the antioxidant potential of natural food/plant extracts as compared with synthetic antioxidants and vitamin E in raw and cooked pork patties.
SO: Meat-sci. Oxford : Elsevier Science Limited. May 2001. v. 58 (1) p. 45-52.
AB: Antioxidant potential for previously identified optimum levels of aloe vera (AV), fenugreek (FGK), ginseng (G), mustard (M), rosemary (R), sage (S), soya protein (SPI), tea catechins (TC) and whey protein concentrate (WPC) were evaluated in raw and cooked patties manufactured from frozen pork. The optimum levels determined were: AV (0.25%), FGK (0.01%), G (0.25%), M (0.10%), R (0.10%), S (0.05%), SPI (0.10%), TC (0.25%) and WPC (4%). Test ingredients were evaluated against synthetic antioxidants butylated hydroxyanisole/butylated hydroxytoluene (BHA/BHT) (0.01%) and a supplemented meat containing natural antioxidant, alpha-tocopherol (1000 mg alpha-tocopheryl acetate/kg feed). Ranking the decreasing antioxidant effectiveness of added ingredients in raw patties on day 9 showed that: Control > G > SPI > FGK > AV > M > WPC > S > alpha-tocopherol >R > TC > BHA/BHT. Cooking resulted in a four-fold increase in TBARS values over raw patties with TC being the most effective antioxidant having significantly ($P < 0.001$) lower TBARS values than the cooked control on days 3, 6 and 9. Ranking of decreasing antioxidant effectiveness of added ingredients showed that: M > SPI > G > FGK > alpha-tocopherol > AV > control > S > BHA/BHT > R > WPC > TC. BHA/BHT had the most beneficial effect on cooked meat redness with Hunter 'a' values being significantly ($P < 0.05$) higher than the control on days 3, 6 and 9. Ranking of Hunter 'a' values for added test ingredients showed that FGK > WPC > control > R > BHA/BHT > alpha-tocopherol > TC > AV > SPI > M > G > S on day 9. Hunter 'L' and 'b' values showed no significant trend over the storage period in either raw or cooked patties. The pH values of both raw and cooked.
pork control patties and products containing added test antioxidants were variable and while a number of trends were observed, no significant differences were recorded between samples.

Record 175
AU: Hsieh,-P.C.; Mau,-J.L.; Huang,-S.H.
TI: Antimicrobial effect of various combinations of plant extracts.
SO: Food-microbiol. London ; Orlando : Academic Press, c1984-. Feb 2001. v. 18 (1) p. 35-43.
AB: The combined extracts of corni fructus, cinnamon and Chinese chive were used to evaluate its antimicrobial activity on common foodborne micro-organisms, including bacteria, yeasts and moulds. The combined extract (8:1:1, v/v/v) showed an entire antimicrobial spectrum and outstanding inhibitory effect. The combined extract was very stable under heat treatment. The inhibitory effect of the combined extract was greater with more acidic pH values but lowered with increased pH values. With addition of metal ions, the antimicrobial activity of the combined extract was slightly affected. With addition of food additives, its antimicrobial activity was slightly enhanced, except for citric acid. When the combined extract used in food products, the expected antimicrobial effect in

dumplings, guava juice and green and black tea was observed. Conclusively, in addition to be used as seasoning, the combined extract is suitable for incorporating in various food products where a naturally antimicrobial additive is desired.

Record 176
AU: Hu,-Q.; Pan,-G.; An,-X.; Ding,-R.
TI: Physiological function of Se-enriched tea fertilised with sodium selenite and naturally high-Se tea in rats.
SO: J-sci-food-agric. West Sussex : John Wiley & Sons Limited. Jan 15, 2001. v. 81 (2) p. 202-204.
AB: In order to increase food selenium (Se) content, Se-enriched tea was produced by fertilising with sodium selenite in low-Se soil. Five groups of rats were fed a low-Se diet supplemented with either water (Se-deficient), sodium selenite or an aqueous extraction of low-Se tea, Se-enriched tea or naturally high-Se tea. The chemical form of Se in Se-enriched tea and the physiological function in rats fed the different Se sources were determined after 8 weeks. The results showed that organic Se accounted for 80% or more of the Se in Se-enriched tea fertilised with sodium selenite and naturally high-Se tea, but no significant differences in the proportion of organic Se and protein Se were found between Se-enriched tea and naturally high-Se tea. The Se biological utilisation rates were 65.41, 68.05 and 70.49% for sodium selenite, Se-enriched tea and naturally high-Se tea respectively. The Se content of blood and liver and the glutathione peroxidase (GSH-Px) activity were significantly increased by feeding Se-enriched tea and sodium selenite compared with low-Se tea, but a more efficient increase in liver GSH-Px activity was obtained with Se-enriched tea than with sodium selenite. No significant differences were found between Se-enriched tea fertilised with sodium selenite and naturally high-Se tea, which proved that the biological effectiveness of Se in Se-enriched tea was higher than that of sodium selenite in increasing liver GSH-Px activity. Se-enriched tea fertilised with sodium selenite in low-Se soil gave the same biological function as naturally high-Se tea. Therefore Se-enriched tea is a safe and effective means of increasing the Se intake of both humans and animals in. low-Se areas.

Record 177
AU: Temple,-S.J.; Boxtel,-A.J.B.-van.
TI: Automatic endpoint determination for batch tea dryers.
SO: J-agric-eng-res. London ; Orlando : Academic Press, 1956-. Jan 2001. v. 78 (1) p. 51-56.

Record 178
AU: Tang,-S.Z.; Kerry,-J.P.; Sheehan,-D.; Buckley,-D.J.; Morrissey,-P.A.
TI: Antioxidative effect of dietary tea catechins on lipid oxidation of long-term frozen stored chicken meat.
SO: Meat-sci. Oxford : Elsevier Science Limited. Mar 2001. v. 57 (3) p. 331-336.

Record 179
AU: McCarthy,-T.L.; Kerry,-J.P.; Kerry,-J.F.; Lynch,-P.B.; Buckley,-D.J.
TI: Assessment of the antioxidant potential of natural food and plant extracts in fresh and previously frozen pork patties.
SO: Meat-sci. Oxford : Elsevier Science Limited. Feb 2001. v. 57 (2) p. 177-184.

Record 180
AU: Ghosh-Hajra,-N.
TI: Tea cultivation : comprehensive treatise. 1st ed.
SO: Lucknow : International Book Distributing Co., 2001. ii, 518 p. : ill. (some col.), maps (some col.)

Record 181
AU: Pettigrew,-Jane.
TI: A social history of tea.
SO: London : National Trust, 2001. 192 p. : ill. (some col.)

Record 182
AU: Singh,-Navinder-K.
TI: Role of women workers in the tea industry of North East India.
SO: New Delhi : Classical Pub. Co., 2001. 231 p.

Record 183
AU: Chatterjee,-Piya, 1965-
TI: A time for tea : women, labor, and post/colonial politics on an Indian plantation.
SO: Durham : Duke University Press, 2001. xvi, 417 p. : ill.