Reference List with Full Abstracts

Elevating Antioxidant Levels in Food Through Organic Farming and Food Processing: A State of Science Review

Organic Center for Education and Promotion
January 2005

1. Higher Concentrations of Flavonoids in Organic Vegetables. 9-11-2003. The Danish Ministry of Food, Agriculture and Fisheries.
   Ref Type: Map
   Ref ID: 690
   Keywords: flavonoid/Flavonoids/organic/Vegetables

2. Adom,K.K., andR.H.Liu. 2002. Antioxidant activity of grains. J Agric Food Chem. 50:6182-6187.
   Ref ID: 205
   Keywords: analysis/Antioxidants/Ascorbic Acid/Cereals/chemistry/Chronic Disease/Coumaric Acids/Flavonoids/Gallic Acid/Health/pharmacology/Phenols/Prostate
   Reprint: Not in File
   Abstract: Epidemiological studies have shown that consumption of whole grains and grain-based products is associated with reduced risk of chronic diseases. The health benefits of whole grains are attributed in part to their unique phytochemical composition. However, the phytochemical contents in grains have been commonly underestimated in the literature, because bound phytochemicals were not included. This study was designed to investigate the complete phytochemical profiles in free, soluble conjugated, and insoluble bound forms, as well as their antioxidant activities in uncooked whole grains. Corn had the highest total phenolic content (15.55 +/- 0.60 micromol of gallic acid equiv/g of grain) of the grains tested, followed by wheat (7.99 +/- 0.39 micromol of gallic acid equiv/g of grain), oats (6.53 +/- 0.19 micromol of gallic acid equiv/g of grain), and rice (5.56 +/- 0.17 micromol of gallic acid equiv/g of grain). The major portion of phenolics in grains existed in the bound form (85% in corn, 75% in oats and wheat, and 62% in rice), although free phenolics were frequently reported in the literature. Ferulic acid was the major phenolic compound in grains tested, with free, soluble-conjugated, and bound ferulic acids present in the ratio 0.1:1:100. Corn had the highest total antioxidant activity (181.42 +/- 0.86 micromol of vitamin C equiv/g of grain), followed by wheat (76.70 +/- 1.38 micromol of vitamin C equiv/g of grain), oats (74.67 +/- 1.49 micromol of vitamin C equiv/g of grain), and rice (55.77 +/- 1.62 micromol of vitamin C equiv/g of grain). Bound phytochemicals were the major contributors to the total antioxidant activity: 90% in wheat, 87% in corn, 71% in rice, and 58% in oats. Bound phytochemicals could survive stomach and intestinal digestion to reach the colon. This may partly explain the mechanism of grain consumption in the prevention of colon cancer, other digestive cancers, breast cancer, and prostate cancer, which is supported by epidemiological studies
   Notes: DA - 20021002
   IS - 0021-8561
   LA - eng
   PT - Journal Article
   RN - 0 (Antioxidants)
   RN - 0 (Coumaric Acids)
   RN - 0 (Flavonoids)
   RN - 0 (Phenols)
   RN - 1135-24-6 (ferulic acid)
   RN - 50-81-7 (Ascorbic Acid)
   SB - IM

3. Adom,K.K., M.E.Sorrells, and R.H.Liu. 2003. Phytochemical profiles and antioxidant activity of wheat varieties. J Agric Food Chem. 51:7825-7834.
Ref ID: 727
Keywords: analysis/antioxidant/Antioxidants/Cardiovascular Diseases/Carotenoids/Catechin/chemistry/Chronic Disease/Coumaric Acids/Diet/Disease/flavonoid/Flavonoids/Food/Fruit/Gallic Acid/Genotype/Health/Human/phenolics/Phenols/Risk/Seeds/Species Specificity/Triticum/Vegetables
Reprint: Not in File
Abstract: Whole grain consumption has been associated with reduced risk of chronic diseases, such as cardiovascular diseases and cancer. These beneficial effects have been attributed to the unique phytochemicals of grains that complement those found in fruits and vegetables. Wheat is one of the major grains in the human diet; however, little is known about the inherent varietal differences in phytochemical profiles, total phenolic and carotenoid contents, or total antioxidant activities of different wheat varieties, which ultimately influence the associated nutritional and health benefits of wheat and wheat products. The objectives of this study were to determine the phytochemical profiles and total antioxidant activity for 11 diverse wheat varieties and experimental lines. The profiles included free, soluble-conjugated, and insoluble-bound forms of total phenolics, flavonoids, and ferulic acids and carotenoid content including lutein, zeaxanthin, and beta-cryptoxanthin. The results showed that total phenolic content (709.8-860.0 micromol of gallic acid equiv/100 g of wheat), total antioxidant activity (37.6-46.4 micromol of vitamin C/g), and total flavonoid content (105.8-141.8 micromol of catechin equiv/100 g of wheat) did not vary greatly among the 11 wheat lines. However, significant differences in total ferulic acid content ($p < 0.05$) and carotenoid content ($p < 0.05$) among the varieties were observed, with carotenoid content exhibiting the greatest range of values. Carotenoid content among the 11 wheat varieties exhibited 5-fold, 3-fold, and 12-fold differences in lutein, zeaxanthin, and beta-cryptoxanthin, respectively. A synthetic wheat experimental line, W7985, gave the lowest carotenoid concentrations of any of the genotypes in this study. Such large genotypic differences in carotenoid content may open up new opportunities for breeding wheat varieties with higher nutritional value
Notes: DA - 20031210
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Coumaric Acids)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 1135-24-6 (ferulic acid)
RN - 36-88-4 (Carotenoids)
SB - IM

4. Afaq,F., V.M.Adhami, N.Ahmad, and H.Mukhtar. 2002. Botanical antioxidants for chemoprevention of photocarcinogenesis. Front Biosci. 7:d784-d792.
Ref ID: 284
Keywords: adverse effects/Anticarcinogenic Agents/Antineoplastic Agents,Phytogenic/Antioxidants/Curcumin/etiology/Flavonoids/Health/Human/Incidence/Oxidative Stress/Oxygen/prevention & control/Radiation-Protective Agents/Silymarin/Skin Neoplasms/Stilbenes/Tea/therapeutic use/Ultraviolet Rays/United States
Reprint: Not in File
Abstract: The incidence of non-melanoma skin cancer, consisting of basal- and squamous- cell carcinoma, continues to increase in the United States and elsewhere. Solar ultraviolet (UV) B radiation has been implicated as its main cause. This adverse effect of UVB has become a major human health concern. Therefore, development of novel strategies to reduce the occurrence of skin cancer is a highly desirable goal. Because UV radiation is known to cause excessive generation of reactive oxygen species (ROS) thereby resulting in an oxidative stress condition, the approaches aimed at counteracting ROS production may be useful for the

prevention of skin cancer. One approach to reduce its occurrence is through 'Photochemoprotection', which we define as 'the use of agents capable of ameliorating the adverse effects of UVB on the skin'. Among many photochemoprotective agents, botanical antioxidants are showing promise. We propose that the use of botanical antioxidants, in combination with the use of sunscreens and educational efforts to avoid excessive sun exposure, may be an effective strategy for reduction of incidence of skin cancer and other UV-mediated damage in humans
Notes: DA - 20020318
IS - 1093-4715
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Anticarcinogenic Agents)
RN - 0 (Antineoplastic Agents, Phytogenic)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Radiation-Protective Agents)
RN - 0 (Silymarin)
RN - 0 (Stilbenes)
RN - 458-37-7 (Curcumin)
RN - 501-36-0 (resveratrol)
RN - 520-36-5 (apigenin)
SB - IM

5. Aherne,S.A., andN.M.O'Brien. 2002. Dietary flavonols: chemistry, food content, and metabolism. Nutrition 18:75-81.
Ref ID: 303
Keywords: Absorption/Beverages/Biological Availability/chemistry/Diet/Flavonoids/Flavonols/Food Analysis/Food Handling/Food Technology/Fruit/Health/Human/Light/metabolism/methods/pharmacokinetics/Tea/Vegetables/Wine
Reprint: Not in File
Abstract: The flavonols belong to a large group of compounds called flavonoids, which are diverse in their chemical structure and characteristics. Fruits, vegetables, and beverages such as tea and red wine are major sources of flavonols in the human diet. The daily consumption of flavonols is difficult to estimate because values depend on accurate assessment of feeding habits and flavonol content in foods. Food sources, dietary intakes, and bioavailability of flavonols are strongly influenced by variations in plant type and growth, season, light, degree of ripeness, food preparation, and processing, all of which are discussed. In the past few years, a number of studies on the absorption and metabolism of flavonols in humans have been published and the findings from these studies are reviewed. We do not discuss the health effects of flavonols
Notes: DA - 20020205
IS - 0899-9007
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
SB - IM

6. Alonso,A.M., D.A.Guillen, C.G.Barroso, B.Puertas, and A.Garcia. 2002. Determination of antioxidant activity of wine byproducts and its correlation with polyphenolic content. J Agric Food Chem. 50:5832-5836.
Ref ID: 208

Keywords: analysis/Antioxidants/Chromatography,High Pressure Liquid/Flavonoids/Freeze Drying/Health/Phenols/Polymers/Support,Non-U.S.Gov't/Wine
Reprint: Not in File
Abstract: It has been demonstrated that wine and other products derived from the grape have a high antioxidant capability; as a possible consequence of this, they may have potential benefits for health. The byproducts of the winemaking process represent a source of antioxidant compounds that has been relatively unexploited to date, but that is now the subject of increasing industrial interest. This article describes an approach to the study of the antioxidant activity of grape marcs, stalks, and dregs of both white and red varieties. This activity is compared with the measurements of their content of total polyphenols and of individual polyphenolic compounds, identified and quantified by HPLC. From the results we have been able to establish a positive correlation between the antioxidant activity and the total polyphenolic content of samples, but not with specific compounds
Notes: DA - 20021002
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (polyphenols)
SB - IM

7. Anderson,D., A.Dhawan, A.Yardley-Jones, C.Ioannides, and J.Webb. 2001. Effect of antioxidant flavonoids and a food mutagen on lymphocytes of a thalassemia patient without chelation therapy in the Comet assay. Teratog. Carcinog. Mutagen. 21:165-174.
Ref ID: 382
Keywords: Absorption/adverse effects/analogs & derivatives/Asia/blood/Carbolines/Carcinogens/Cell Survival/Chelating Agents/chemistry/Comet Assay/Dose-Response Relationship,Drug/drug effects/Flavonoids/Food/genetics/Health/Human/Iron/Kaempferols/Lymphocytes/metabolism/methods/Mutagens/Oxygen/Quercetin/Sensitivity and Specificity/Support,Non-U.S.Gov't/Thalassemia
Reprint: Not in File
Abstract: Thalassemia remains a significant health problem in Europe, the Middle East, and Asia. In such patients, generally high iron levels make free oxygen radicals accessible, for example, through Fenton-type chemistry, and generate superoxide and hydroxyl radicals. Increased oxygen radical capacity is known to be associated with cancer and ageing. It was shown in previous studies that peripheral blood lymphocytes from a sickle/beta thal double heterozygote-sickle phenotype, thalassemia patient, not yet on chelation therapy, were more sensitive to the effects of oxygen radicals and iron salts than lymphocytes from normal controls. Iron overload in thalassemia patients can result from dietary absorption. It was considered that with other dietary agents, such as food mutagens and flavonoids, the thalassemia patient might also show increased sensitivity to the effects of these agents. The present study, therefore, compared the effects of the food mutagen/carcinogen, 3-amino-1-methyl-5H-pyrido(4,3-b)indole (Trp-P-2), in fresh or frozen normal human peripheral lymphocytes with frozen lymphocytes from the same thalassemia patient. The lymphocytes from the thalassemia patient showed an approximately two-fold increase in sensitivity. When a combination of Tryp-P-2, with either quercitin or kaempferol, was compared in frozen lymphocytes and lymphocytes from the thalassemia patient, a two-fold increase in sensitivity was also maintained. Responses to Trp-P-2 were reduced to untreated control levels at the highest doses of quercitin and kaempferol, and were highly significantly different by comparison with Trp-P-2 alone ($P<0.001$). The flavonoids acted in an antigenotoxic/antioxidant manner. Sensitivity was slightly increased with kaempferol by comparison with quercitin. At low concentrations of the flavonoids there was some evidence of an exacerbation of response, perhaps due to a switch to pro-oxidant status. This

exacerbation of response at low doses of flavonoids has been seen in earlier studies with normal lymphocytes. Teratogenesis Carcinog. Mutagen. 21:165-174, 2001
Notes: DA - 20010306
IS - 0270-3211
LA - eng
PT - Journal Article
RN - 0 (Carbolines)
RN - 0 (Carcinogens)
RN - 0 (Chelating Agents)
RN - 0 (Flavonoids)
RN - 0 (Kaempferols)
RN - 0 (Mutagens)
RN - 117-39-5 (Quercetin)
RN - 520-18-3 (kaempferol)
RN - 62450-07-1 (Trp-P-2)
RN - 7439-89-6 (Iron)
SB - IM

8. Arai,Y., S.Watanabe, M.Kimira, K.Shimoi, R.Mochizuki, and N.Kinae. 2000. Dietary intakes of flavonols, flavones and isoflavones by Japanese women and the inverse correlation between quercetin intake and plasma LDL cholesterol concentration. J Nutr. 130:2243-2250.
Ref ID: 423
Keywords: administration & dosage/Adult/Aged/Agriculture/analysis/Anthropometry/Antioxidants/Ascorbic Acid/blood/Blood Pressure/Carotenoids/chemistry/Cholesterol/Cross-Sectional Studies/Diet/drug effects/Energy Intake/Female/Flavonoids/Flavonols/Health/Heart/Human/Incidence/Isoflavones/Japan/ Lipoproteins,LDL Cholesterol/Middle Aged/Onions/pharmacology/Quercetin/Support,Non-U.S.Gov't/urine/Vitamin E
Reprint: Not in File
Abstract: The intake of flavonols, flavones and isoflavones by Japanese women was calculated from our food-phytochemical composition table. The relationship between intake of these phytochemicals and various anthropometric and blood chemistry data was analyzed in a cross-sectional study. The subjects were 115 women volunteers, aged 29-78 y, living in the northern part of Japan. Each subject completed a 3-d dietary record and received a health check up, including urine and blood sampling for biochemical analysis. Total mean intakes of flavonoids (sum of flavonols and flavones) and isoflavones were 16.7 and 47.2 mg/d, respectively. The major source of flavonoids was onions (45.9%) and that of isoflavones was tofu (37.0%). Total intake of isoflavones exceeded that of other dietary antioxidants, such as flavonoids, carotenoids (3.5 mg/d) and vitamin E (8.2 mg/d), and was approximately one half of the vitamin C intake (109 mg/d). The total intake of flavonoids was inversely correlated with the plasma total cholesterol concentration (TC) ($r = -0.236$, $P: < 0.05$) and plasma LDL cholesterol concentration (LDL-C) ($r = -0.220$, $P: < 0.05$), after the adjustment for age, body mass index and total energy intake. As a single component, quercetin was inversely correlated with both TC ($r = -0.261$, $P: < 0.01$) and LDL-C ($r = -0. 263$, $P: < 0.01$). Among Japanese, flavonoid and isoflavone intake is the main component among nonnutrient phytochemicals with antioxidant potential in the diet. These results suggest that a high consumption of both flavonoids and isoflavones by Japanese women may contribute to their low incidence of coronary heart disease compared with women in other countries
Notes: DA - 20001003
IS - 0022-3166
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Isoflavones)
RN - 0 (Lipoproteins, LDL Cholesterol)

RN - 117-39-5 (Quercetin)
RN - 1406-18-4 (Vitamin E)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

9. Arts,I.C., P.B.van De, and P.C.Hollman. 2000. Catechin contents of foods commonly consumed in The Netherlands. 2. Tea, wine, fruit juices, and chocolate milk. J Agric Food Chem. 48:1752-1757.
Ref ID: 450
Keywords: analysis/Beverages/Catechin/Chromatography,High Pressure Liquid/Chronic Disease/Food/Food Analysis/Fruit/Health/Human/Netherlands/Risk/Spectrometry,Fluorescence/Spectrophotometry,Ultraviolet/Support,Non-U.S.Gov't/Tea/Wine
Reprint: Not in File
Abstract: Catechins, compounds that belong to the flavonoid class, are potentially beneficial to human health. To enable an epidemiological evaluation of catechins, data on their contents in foods are required. HPLC with UV and fluorescence detection was used to determine the levels of (+)-catechin, (-)-epicatechin, (+)-gallocatechin (GC), (-)-epigallocatechin (EGC), (-)-epicatechin gallate (ECg), and (-)-epigallocatechin gallate (EGCg) in 8 types of black tea, 18 types of red and white wines, apple juice, grape juice, iced tea, beer, chocolate milk, and coffee. Tea infusions contained high levels of catechins (102-418 mg of total catechins/L), and tea was the only beverage that contained GC, EGC, ECg, and EGCg in addition to (+)-catechin and (-)-epicatechin. Catechin concentrations were still substantial in red wine (27-96 mg/L), but low to negligible amounts were found in white wine, commercially available fruit juices, iced tea, and chocolate milk. Catechins were absent from beer and coffee. The data reported here provide a base for the epidemiological evaluation of the effect of catechins on the risk for chronic diseases
Notes: DA - 20000828
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 154-23-4 (Catechin)
SB - IM

10. Arts,I.C., P.B.van De, and P.C.Hollman. 2000. Catechin contents of foods commonly consumed in The Netherlands. 1. Fruits, vegetables, staple foods, and processed foods. J Agric Food Chem. 48:1746-1751.
Ref ID: 451
Keywords: analysis/Catechin/Chromatography,High Pressure Liquid/Chronic Disease/Food/Food Analysis/Fruit/Health/Human/Netherlands/Risk/Spectrometry,Fluorescence/Spectrophotometry,Ultraviolet/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Abstract: Catechins, compounds that belong to the flavonoid class, are potentially beneficial to human health. To enable epidemiological evaluation of these compounds, data on their contents in foods are required. HPLC with UV and fluorescence detection was used to determine the levels of (+)-catechin, (-)-epicatechin, (+)-gallocatechin (GC), (-)-epigallocatechin (EGC), (-)-epicatechin gallate (ECg), and (-)-epigallocatechin gallate (EGCg) in 24 types of fruits, 27 types of vegetables and legumes, some staple foods, and processed foods commonly consumed in The Netherlands. Most fruits, chocolate, and some legumes contained catechins. Levels varied to a large extent: from 4.5 mg/kg in kiwi fruit to 610 mg/kg in black chocolate. (+)-Catechin and (-)-epicatechin were the predominant catechins; GC, EGC, and ECg were detected in some foods, but none of the foods contained EGCg. The data reported here provide a base for the epidemiological evaluation of the effect of catechins on the risk for chronic diseases
Notes: DA - 20000828
IS - 0021-8561
LA - eng

PT - Journal Article
RN - 154-23-4 (Catechin)
SB - IM

11. Arts,I.C., P.C.Hollman, E.J.Feskens, H.B.Bueno de Mesquita, and D.Kromhout. 2001. Catechin intake and associated dietary and lifestyle factors in a representative sample of Dutch men and women. Eur. J Clin Nutr. 55:76-81.
Ref ID: 368
Keywords: administration & dosage/Adolescent/Adult/Age Factors/Aged/Aged,80 and over/beta Carotene/Cacao/Cardiovascular Diseases/Catechin/chemistry/Child/Child,Preschool/Chronic Disease/Diet/Diet Surveys/Energy Intake/epidemiology/Female/Food/Health/Human/Infant/Life Style/Male/Middle Aged/Netherlands/Sex Factors/Smoking/Socioeconomic Factors/Support,Non-U.S.Gov't/Tea
Reprint: Not in File
Abstract: 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 1-97y. 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
Notes: DA - 20010417
IS - 0954-3007
LA - eng
PT - Journal Article
RN - 154-23-4 (Catechin)
SB - IM

12. Arts,I.C., D.R.Jacobs, Jr., and A.R.Folsom. 2002. Dietary catechins and cancer incidence: the Iowa Women's Health Study. IARC Sci Publ. 156:353-355.
Ref ID: 190
Keywords: administration & dosage/Aged/Catechin/Cohort Studies/Confidence Intervals/Diet/Dose-Response Relationship,Drug/epidemiology/Female/Health/Human/Incidence/Iowa/Middle Aged/Neoplasms/Odds Ratio/pharmacology/Postmenopause/Rectal Neoplasms/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./Tea
Reprint: Not in File
Notes: DA - 20021217
IS - 0300-5038
LA - eng
PT - Journal Article
RN - 154-23-4 (Catechin)
SB - IM

13. Aruoma,O.I., T.Bahorun, and L.S.Jen. 2003. Neuroprotection by bioactive components in medicinal and food plant extracts. Mutat. Res. 544:203-215.

Ref ID: 46
Keywords: Brain/chemistry/Chemokines/classification/Diet/drug effects/Flavonoids/Human/isolation & purification/Models,Neurological/Neurodegenerative Diseases/Neuroprotective Agents/Oxidative Stress/pharmacology/Plant Extracts/Plants,Edible/Plants,Medicinal/prevention & control/therapeutic use
Reprint: Not in File
Abstract: Neurodegenerative diseases of the human brain comprise a variety of disorders that affect an increasing percentage of the population. Some of these are age dependent (e.g. Alzheimer's and Parkinson's diseases) and some are infection dependent, e.g. human immunodeficiency virus (HIV/AIDS). The vulnerable brain regions in HIV/AIDS individuals include the dentate nucleus in the cerebellum, the red nucleus, substantia nigra (SN) in the mid-brain, the subthalamic nucleus, thalamic fasciculus in the diencephalons, the globus pallidus and striatum (or neostriatum, which consists of caudate and putamen) in the forebrain. Lesion in these regions may lead to progressive dementia, which is similar to what is observed in Alzheimer's disease and Parkinson's disease. The entry of calcium into the cytoplasm of cells at concentrations that can activate oxidative enzymes such as phospholipase A(2) and xanthine oxidase, deplete cells of cysteine and glutathione, cause mitochondrial release of free radicals and cell death. Glutamate and its receptors are key molecular elements at the interface between neurons and glia. Dietary factors can modulate physiological functions (including brain function) thereby increasing the economic productivity of a population as a function of health. A greater understanding of the molecular mechanisms of neuroprotection, oxidative stress and immune function will facilitate definition of the prophylactic potentials of diet, nutritional/food supplements, medicinal plants and herbal extracts
Notes: DA - 20031203
IS - 0027-5107
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Chemokines)
RN - 0 (Flavonoids)
RN - 0 (Neuroprotective Agents)
RN - 0 (Plant Extracts)
SB - IM

14. Asami,D.K., Y.J.Hong, D.M.Barrett, and A.E.Mitchell. 2003. Comparison of the total phenolic and ascorbic acid content of freeze-dried and air-dried marionberry, strawberry, and corn grown using conventional, organic, and sustainable agricultural practices. J. Agric. Food Chem. 51:1237-1241.
Ref ID: 125
Keywords: Agriculture/Air/analysis/Ascorbic Acid/chemistry/Comparative Study/comparison/conventional/Desiccation/Food/Food Handling/Food Preservation/Fragaria/Freeze Drying/Freezing/Fruit/Health/Health Food/Human/human health/methods/organic/Phenols/secondary/strawberries/Zea mays
Reprint: In File
Abstract: Secondary phenolic metabolites play an important role in plant defense mechanisms, and increasing evidence indicates that many are important in human health. To date, few studies have investigated the impact of various agricultural practices on levels of secondary plant metabolites. To address this issue, the total phenolic (TP) content of marionberries, strawberries, and corn grown by sustainable, organic, or conventional cultural practices were measured. Additionally, the effects of three common postharvest processing treatments (freezing, freeze-drying, and air-drying) on the TP content of these agricultural products were also investigated. Statistically higher levels of TPs were consistently found in organically and sustainably grown foods as compared to those produced by conventional agricultural practices. In all samples, freeze-drying preserved higher levels of TPs in comparison with air-drying
Notes: DA - 20030219
IS - 0021-8561

LA - eng
PT - Journal Article
RN - 0 (Phenols)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

15. Atkinson,C., H.E.Skor, E.D.Fitzgibbons, D.Scholes, C.Chen, K.Wahala, S.M.Schwartz, and J.W.Lampe. 2002. Overnight urinary isoflavone excretion in a population of women living in the United States, and its relationship to isoflavone intake. Cancer Epidemiol Biomarkers Prev. 11:253-260.
Ref ID: 286
Keywords: administration & dosage/Adult/Biological Markers/Case-Control Studies/Diet/Diet Records/Female/Genistein/Health/Human/Isoflavones/metabolism/methods/Middle Aged/Population Surveillance/Soybeans/Specimen Handling/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./Time Factors/United States/urine/Washington
Reprint: Not in File
Abstract: Dietary isoflavones are biologically active in humans, but few observational data exist on the relationship between isoflavone intake and excretion in Western populations. We examined associations between self-reported soy intakes and overnight urinary isoflavone excretion in a population-based sample of western Washington State women, and we investigated the usefulness of one versus two overnight urine samples, collected 48 h apart, as a biomarker of intake. Isoflavones (genistein, daidzein, O-desmethylangolensin, and equol) were measured in two overnight urine collections from 363 women recruited from a health maintenance organization. Soy food intakes were assessed using two 1-day diet records completed on each day prior to the urine collections and a food frequency questionnaire (FFQ) that had been completed by 312 of the women with regard to their dietary habits 3.5 years (range, 2-5 years) before the urine collections. Twenty-one percent of the women consumed soy on either day of the diet recall, and 13% and 34% of the women consumed soy at least once a week or at least once a month, respectively, according to the FFQ. Women who consumed soy at either of the two diet recalls or at the FFQ (at least once a week or at least once a month) had a significantly higher urinary excretion of isoflavones than women who did not consume soy ($P < 0.01$). Among women who consumed soy at either of the two diet recalls or at the FFQ (soy consumed at least once a month), isoflavone intake and excretion correlated significantly ($P < 0.01$). Excretion of the individual isoflavones correlated significantly between the two urine samples collected 48 h apart (genistein, $r = 0.41$ and $P < 0.001$; daidzein, $r = 0.30$ and $P < 0.001$; O-desmethylangolensin, $r = 0.46$ and $P < 0.001$; equol, $r = 0.60$ and $P < 0.001$). Differences between soy consumers and nonconsumers and associations between intakes and excretion remained significant whether one or both urine collections were considered. Measuring isoflavone excretion in one overnight urine collection serves as a biomarker of recent or past isoflavone intake, even in populations whose intake of soy foods is relatively low
Notes: DA - 20020315
IS - 1055-9965
LA - eng
PT - Journal Article
RN - 0 (Biological Markers)
RN - 0 (Isoflavones)
SB - IM

16. Aziz,A.A., C.A.Edwards, M.E.Lean, and A.Crozier. 1998. Absorption and excretion of conjugated flavonols, including quercetin-4'-O-beta-glucoside and isorhamnetin-4'-O-beta-glucoside by human volunteers after the consumption of onions. Free Radic. Res 29:257-269.
Ref ID: 1827
Keywords: Absorption/Adult/Affect/analogs & derivatives/antioxidant/Antioxidants/Biology/blood/Cookery/coronary heart disease/Diet/Disease/excretion/Female/flavonoid/Flavonoids/Flavonols/Glucosides/Heart

/Human/In Vitro/Incidence/Male/metabolism/Molecular Biology/Onions/pharmacokinetics/Plants/Plasma/polyphenols/Quercetin/Support,Non-U.S.Gov't/Time/UK/urine
Reprint: Not in File
Abstract: Flavonols are polyphenols found ubiquitously in plants and plant-products. Flavonols, particularly quercetin, are potent antioxidants in vitro and their intake has been associated inversely with the incidence of coronary heart disease. The aim of this study was to investigate the accumulation in plasma and excretion in urine of flavonol glucosides following ingestion of lightly fried onions. Five healthy volunteers followed a low-flavonoid diet for 3 days. On day 4, after an overnight fast, subjects were given 300 g of lightly fried yellow onions which contain conjugates of quercetin and isorhamnetin, including quercetin-3,4 '-diO-beta-glucoside, isorhamnetin-4'-O-beta-glucoside and quercetin-4'-O-beta-glucoside. Blood collection was carried out at 0 min, 0.5, 1.0, 1.5, 2, 3, 4, 5 and 24h after the supplement. In addition, subjects collected all their urine for 24h following the onion supplement. Isorhamnetin-4'-O-beta-glucoside and quercetin-4 '-O-beta-glucoside accumulated in plasma with maximum levels, defined as proportion of intake, of 10.7+/-2.6% and 0.13+/-0.03% respectively. The time of the quercetin-4'glucoside peak plasma concentration was 1.3+/-0.2 h after the ingestion of onions while a value of 1.8+/-0.7 h was obtained for isorhamnetin-4'-glucoside. Excretion in urine, as a proportion of intake, was 17.4+/-8.3% for isorhamnetin-4'-O-beta-glucoside and 0.2+/-0.1% for quercetin-4'-O-beta-glucoside. Possible reasons for the accumulation and excretion of isorhamnetin-4'-glucoside in proportionally much higher amounts than quercetin-4'-glucoside are discussed. It is concluded that flavonols are absorbed into the bloodstream as glucosides and minor structural differences affect markedly both the level of accumulation and the extent to which the conjugates are excreted
Notes: DA - 19990119
IS - 1071-5762
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Glucosides)
RN - 0 (isorhamnetin-4'-O-glucoside)
RN - 117-39-5 (Quercetin)
RN - 20229-56-5 (spiraeoside)
SB - IM

17. Badger,T.M., M.J.Ronis, R.Hakkak, J.C.Rowlands, and S.Korourian. 2002. The health consequences of early soy consumption. J Nutr. 132:559S-565S.
Ref ID: 291
Keywords: administration & dosage/adverse effects/Aging/Animals/Asia/blood/Diet/Health/Health Status/Human/Infant/Infant Food/Infant,Newborn/Isoflavones/Neoplasms/prevention & control/Proteins/Soybean Proteins/Support,Non-U.S.Gov't/Support,U.S.Gov't,Non-P.H.S./United States
Reprint: Not in File
Abstract: Infants fed soy formula are the segment of the U. S. population that consumes the most soy. Before birth and after weaning, most Americans are not exposed to appreciable levels of soyfoods other than foods that have small amounts of processed soy components. The opposite scenario occurs in Asia, because Asians are more likely to consume relatively high levels of soyfoods throughout life, except between birth and weaning, when breastfeeding or milk-based formula are common. Soy formula is made with soy protein isolate containing isoflavones (SPI+) and supports normal growth and development in term infants. Recent data suggest that there are no long-term adverse effects of early exposure to soy formula through young adulthood. It is as yet unknown whether soy formula consumption by infants will result in health problems or benefits upon aging, but multigenerational animal studies with diets made with SPI+ have not revealed any problems. Soy isoflavones can function as estrogen agonists, antagonists or selective estrogen receptor modulators, depending on the conditions, and much research has focused on health effects of purified isoflavones. Results from several

studies suggest that the effects of diets made with SPI+ differ significantly from those of diets to which purified soy isoflavones are added. Furthermore, it seems that soy protein processed to contain lower levels of isoflavones also provides significant health benefits. Further research is needed to confirm the results of the few studies that have been conducted and new studies are needed to investigate the more subtle effects that could occur during development or that could surface later in life
Notes: DA - 20020306
IS - 0022-3166
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Isoflavones)
RN - 0 (Soybean Proteins)
SB - IM

18. Bagchi,D., M.Bagchi, S.J.Stohs, D.K.Das, S.D.Ray, C.A.Kuszynski, S.S.Joshi, and H.G.Pruess. 2000. Free radicals and grape seed proanthocyanidin extract: importance in human health and disease prevention. Toxicology 148:187-197.
Ref ID: 422
Keywords: Animals/antagonists & inhibitors/Anthocyanins/Antioxidants/Apoptosis/Ascorbic Acid/beta Carotene/Biological Availability/Cardiovascular Diseases/chemistry/Comparative Study/cytology/DNA Damage/Dose-Response Relationship,Drug/drug effects/Flow Cytometry/Free Radical Scavengers/Free Radicals/Fruit/Health/Human/In Vitro/Keratinocytes/Kidney Diseases/Lipid Peroxidation/Liver Diseases/Neoplasms/Nuts/Oxidative Stress/pharmacokinetics/pharmacology/Plant Extracts/prevention & control/Proanthocyanidins/Rats/Reperfusion Injury/Seeds/Structure-Activity Relationship/Vegetables/Vitamin E/Vitamins
Reprint: Not in File
Abstract: Free radicals have been implicated in over a hundred disease conditions in humans, including arthritis, hemorrhagic shock, atherosclerosis, advancing age, ischemia and reperfusion injury of many organs, Alzheimer and Parkinson's disease, gastrointestinal dysfunctions, tumor promotion and carcinogenesis, and AIDS. Antioxidants are potent scavengers of free radicals and serve as inhibitors of neoplastic processes. A large number of synthetic and natural antioxidants have been demonstrated to induce beneficial effects on human health and disease prevention. However, the structure-activity relationship, bioavailability and therapeutic efficacy of the antioxidants differ extensively. Oligomeric proanthocyanidins, naturally occurring antioxidants widely available in fruits, vegetables, nuts, seeds, flowers and bark, have been reported to possess a broad spectrum of biological, pharmacological and therapeutic activities against free radicals and oxidative stress. We have assessed the concentration- or dose-dependent free radical scavenging ability of a novel IH636 grape seed proanthocyanidin extract (GSPE) both in vitro and in vivo models, and compared the free radical scavenging ability of GSPE with vitamins C, E and beta-carotene. These experiments demonstrated that GSPE is highly bioavailable and provides significantly greater protection against free radicals and free radical-induced lipid peroxidation and DNA damage than vitamins C, E and beta-carotene. GSPE was also shown to demonstrate cytotoxicity towards human breast, lung and gastric adenocarcinoma cells, while enhancing the growth and viability of normal human gastric mucosal cells. The comparative protective effects of GSPE, vitamins C and E were examined on tobacco-induced oxidative stress and apoptotic cell death in human oral keratinocytes. Oxidative tissue damage was determined by lipid peroxidation and DNA fragmentation, while apoptotic cell death was assessed by flow cytometry. GSPE provided significantly better protection as compared to vitamins C and E, singly and in combination. GSPE also demonstrated excellent protection against acetaminophen overdose-induced liver and kidney damage by regulating bcl-X(L) gene, DNA damage and presumably by reducing oxidative stress. GSPE demonstrated excellent protection against myocardial ischemia-reperfusion injury and myocardial infarction in rats. GSPE was also shown to upregulate bcl(2) gene and

downregulate the oncogene c-myc. Topical application of GSPE enhances sun protection factor in human volunteers, as well as supplementation of GSPE ameliorates chronic pancreatitis in humans. These results demonstrate that GSPE provides excellent protection against oxidative stress and free radical-mediated tissue injury
Notes: DA - 20001006
IS - 0300-483X
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Free Radical Scavengers)
RN - 0 (Free Radicals)
RN - 0 (Plant Extracts)
RN - 0 (Proanthocyanidins)
RN - 1406-18-4 (Vitamin E)
RN - 18206-61-6 (proanthocyanidin)
RN - 50-81-7 (Ascorbic Acid)
RN - 7235-40-7 (beta Carotene)
SB - IM

19. Bagchi,D., D.K.Das, A.Tosaki, M.Bagchi, and S.C.Kothari. 2001. Benefits of resveratrol in women's health. Drugs Exp. Clin Res. 27:233-248.
Ref ID: 276
Keywords: adverse effects/Animals/antagonists & inhibitors/Anthocyanins/Anticarcinogenic Agents/Antioxidants/Dose-Response Relationship,Drug/Estrogens,Non-Steroidal/Female/Free Radicals/Health/Heart/Heart Diseases/Human/Incidence/Isoflavones/Myocardium/Oxygen/Plant Preparations/prevention & control/Proanthocyanidins/Prostate/Rats/Rats,Sprague-Dawley/Reperfusion Injury/Risk/Stilbenes/therapeutic use/Ventricular Fibrillation/Wine/Women's Health
Reprint: Not in File
Abstract: Resveratrol and trans-resveratrol are powerful phytoestrogens, present in the skins of grapes and other plant foods and wine, which demonstrate a broad spectrum of pharmacological and therapeutic health benefits. Phytoestrogens are naturally occurring plant-derived nonsteroidal compounds that are functionally and structurally similar to steroidal estrogens, such as estradiol, produced by the body. Various studies, reviewed herein, have demonstrated the health benefits of phytoestrogens in addressing climacteric syndrome including vasomotor symptoms and postmenopausal health risks, as well as their anticarcinogenic, neuroprotective and cardioprotective activities and prostate health and bone formation promoting properties. Conventional HRT drugs have been demonstrated to cause serious adverse effects including stroke and gallbladder disease, as well as endometrial, uterine and breast cancers. Recent research demonstrates that trans-resveratrol binds to human estrogen receptors and increases estrogenic activity in the body. We investigated the effects of protykin, a standardized extract of trans-resveratrol from Polygonum cuspidatum, on cardioprotective function, the incidence of reperfusion-induced arrhythmias and free radical production in isolated ischemic/reperfused rat hearts. The rats were orally treated with two different daily doses of protykin for 3 weeks. Coronary effluents were measured for oxygen free radical production by electron spin resonance (ESR) spectroscopy in treated and drug-free control groups. In rats treated with 50 and 100 mg/kg of protykin, the incidence of reperfusion-induced ventricular fibrillation was reduced from its control value of 83% to 75% ($p < 0.05$) and 33% ($p < 0.05$), respectively. Protykin was seen to possess cardioprotective effects against reperfusion-induced arrhythmias through its ability to reduce or remove the reactive oxygen species in ischemic/reperfused myocardium. Taken together, these data suggest that trans-resveratrol supplementation may be a potential alternative to conventional HRT for cardioprotection and osteoporosis prevention and may confer other potential health benefits in women
Notes: DA - 20020415

IS - 0378-6501
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Anticarcinogenic Agents)
RN - 0 (Antioxidants)
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Free Radicals)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (Proanthocyanidins)
RN - 0 (Stilbenes)
RN - 0 (phytoestrogens)
RN - 18206-61-6 (proanthocyanidin)
RN - 501-36-0 (resveratrol)
SB - IM

20. Bagchi,D., C.K.Sen, S.D.Ray, D.K.Das, M.Bagchi, H.G.Preuss, and J.A.Vinson. 2003. Molecular mechanisms of cardioprotection by a novel grape seed proanthocyanidin extract. Mutat. Res. 523-524:87-97.
Ref ID: 154
Keywords: Animals/Anthocyanins/Antioxidants/Arteriosclerosis/beta Carotene/Cardiotonic Agents/chemistry/DNA Damage/Doxorubicin/drug effects/drug therapy/Free Radical Scavengers/Heart/Human/Hypercholesterolemia/isolation & purification/Male/Mice/Mice,Inbred ICR/Myocardium/Oxidative Stress/Oxygen/pathology/pharmacology/Phytotherapy/Plant Extracts/prevention & control/Proanthocyanidins/Proteins/Seeds/toxicity/Transcription Factors/Vitamins/Vitis
Reprint: Not in File
Abstract: Free radicals and oxidative stress play a crucial role in the pathophysiology of a broad spectrum of cardiovascular diseases including congestive heart failure, valvular heart disease, cardiomyopathy, hypertrophy, atherosclerosis and ischemic heart disease. We have demonstrated that IH636 grape seed proanthocyanidin extract (GSPE) provides superior antioxidant efficacy as compared to Vitamins C, E and beta-carotene. A series of studies were conducted using GSPE to demonstrate its cardioprotective ability in animals and humans. GSPE supplementation improved cardiac functional assessment including post-ischemic left ventricular function, reduced myocardial infarct size, reduced ventricular fibrillation (VF) and tachycardia, decreased the amount of reactive oxygen species (ROS) as detected by ESR spectroscopy and reduced malondialdehyde (MDA) formation in the heart perfusate. Cardiomyocyte apoptosis detected by terminal deoxynucleotidyltransferase-mediated dUTP nick end labeling (TUNEL) staining. In concert, the proapoptotic signals mediated by JNK-l and c-fos proteins were also reduced suggesting that the novel cardioprotective properties of GSPE may be at least partially attributed to its ability to block anti-death signaling mediated through the proapoptotic transcription factors and genes such as JNK-1 and c-JUN. In a separate study, GSPE pretreatment significantly inhibited doxorubicin-induced cardiotoxicity as demonstrated by reduced serum creatine kinase (CK) activity, DNA damage and histopathological changes in the cardiac tissue of mice. Concentration-dependent efficacy of GSPE was also assessed in a hamster atherosclerosis model. Approximately 49 and 63% reduction in foam cells, a biomarker of early stage atherosclerosis, were observed following supplementation of 50 and 100 mg GSPE/kg body weight, respectively. A human clinical trial was conducted on hypercholesterolemic subjects. GSPE supplementation significantly reduced oxidized LDL, a biomarker of cardiovascular diseases. Finally, a cDNA microarray study demonstrated significant inhibition of inducible endothelial CD36 expression, a novel cardioregulatory gene, by GSPE. These results demonstrate that GSPE may serve as a potential therapeutic tool in promoting cardiovascular health via a number of novel mechanisms
Notes: DA - 20030311
IS - 0027-5107

LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Cardiotonic Agents)
RN - 0 (Free Radical Scavengers)
RN - 0 (Plant Extracts)
RN - 0 (Proanthocyanidins)
RN - 18206-61-6 (proanthocyanidin)
RN - 23214-92-8 (Doxorubicin)
SB - IM

21. Barbaste,M., B.Berke, M.Dumas, S.Soulet, J.C.Delaunay, C.Castagnino, V.Arnaudinaud, C.Cheze, and J.Vercauteren. 2002. Dietary antioxidants, peroxidation and cardiovascular risks. J Nutr. Health Aging 6:209-223.
Ref ID: 288
Keywords: administration & dosage/Aged/Aging/Alcohol Drinking/analysis/Antioxidants/Beverages/Cardiovascular Diseases/Diet/etiology/Female/Flavonoids/Health/Human/Lipid Peroxidation/Male/metabolism/Oxidation-Reduction/Oxygen/pathology/Phenols/physiology/Polymers/prevention & control/Risk/Risk Factors/Support,Non-U.S.Gov't/Wine
Reprint: Not in File
Abstract: Most of the many epidemiological studies in the field strongly suggest that an equilibrated diet such as the so-called "mediterranean diet", is associated with protective effects against major diseases, and particularly, against cardiovascular risks. Since many reports also consider reactive oxygen species or free radical oxidations to be responsible for the accompanying disorders of most pathologies as well as for ageing, it is conceivable that natural plant metabolites such as polyphenols, are likely to play an important role in insuring this protection. Indeed, not only their presence, in particularly high amounts and varieties in foods of such a diet, but also, inter alia, their very potent antioxidant or radical scavenging properties, make polyphenols best accounting for the parodoxical part of the french paradox . Therefore, many efforts have been made to assess the mechanisms for such a cardiovascular disease protection. Whatever convincing were the polyphenols properties demonstrated by many in vitro experiments to support those theories, quite a great number of the results appeared somewhat contradictory when transposed to humans, in the in vivo situation. Some people totally refute this explanation, thinking that health benefits, as far as alcoholic beverages are concerned, originate from ethanol but also, with no doubt, some polyphenols even revealing to be pro-oxidants
Notes: DA - 20020311
IS - 1279-7707
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (polyphenols)
SB - IM

22. Beecher,G.R. 2003. Overview of dietary flavonoids: nomenclature, occurrence and intake. J Nutr. 133:3248S-3254S.
Ref ID: 25

Keywords: administration &
dosage/analysis/chemistry/Diet/flavonoid/Flavonoids/Food/Food Analysis/Food Composition/Food Handling/Food Preferences/Health/Human/Molecular Structure/Nutrition/Polymers/polyphenols/Proanthocyanidins/Tannins/Tea/Terminology
Reprint: Not in File
Abstract: Flavonoids and their polymers constitute a large class of food constituents, many of which alter metabolic processes and have a positive impact on health. Flavonoids are a subclass of polyphenols. They generally consist of two aromatic rings, each containing at least one hydroxyl, which are connected through a three-carbon "bridge" and become part of a six-member heterocyclic ring. The flavonoids are further divided into subclasses based on the connection of an aromatic ring to the heterocyclic ring, as well as the oxidation state and functional groups of the heterocyclic ring. Within each subclass, individual compounds are characterized by specific hydroxylation and conjugation patterns. Many flavonoids in foods also occur as large molecules (tannins). These include condensed tannins (proanthocyanidins), derived tannins and hydrolysable tannins. For proanthocyanidins, three subclasses (15 characterized) have been identified in foods. Monomers are connected through specific carbon-carbon and ether linkages to form polymers. Derived tannins are formed during food handling and processing, and found primarily in black and oolong teas. Flavonoids are widely distributed in nature, albeit not uniformly. As a result, specific groups of foods are often rich sources of one or more subclasses of these polyphenols. The polyphenolic structure of flavonoids and tannins renders them quite sensitive to oxidative enzymes and cooking conditions. Scientists in several countries have estimated intakes of a few subclasses of flavonoids from limited food composition databases. These observations suggest large differences in consumption, due in part to cultural and food preferences among populations of each country
Notes: DA - 20031001
IS - 0022-3166
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
SB - IM

23. Benbrook, C. M. Minimizing Pesticide Dietary Exposure Through the Consumption of Organic Food. State of Science Review , 1-63. 5-1-0004. Organic Center for Education and Promotion.
Ref Type: Generic
Ref ID: 1860
Keywords: Food/organic/pesticide

24. Blaut,M., L.Schoefer, and A.Braune. 2003. Transformation of flavonoids by intestinal microorganisms. Int. J Vitam. Nutr. Res. 73:79-87.
Ref ID: 129
Keywords: analogs &
derivatives/analysis/Animals/Biotransformation/Cereals/chemistry/Diet/Eubacterium/Flavonoids/Flavonols/Fruit/Germ-Free Life/growth & development/Human/Intestines/isolation & purification/metabolism/microbiology/Plants,Edible/Quercetin/Rats/urine/Vegetables
Reprint: Not in File
Abstract: Fruit, vegetables and cereals contain a wealth of secondary plan metabolites which have been implicated in the promotion of health. To understand the mechanism of their action it is necessary to gain more information on their fate in the body following ingestion. A certain proportion of ingested secondary plant constituents may escape absorption in the small intestine and therefore undergo transformation by intestinal microorganisms or enterohepatic circulation. To study the transformation of secondary plant metabolites by bacteria, Eubacterium ramulus was isolated from human feces and incubated with selected flavonoids. E. ramulus is a strictly anaerobic bacterium which was found to be present in the gastrointestinal tract of most individuals investigated. E. ramulus cleaves the ring system of

several flavonols and flavones giving rise to the corresponding hydroxyphenylacetic and hydroxyphenylpropionic acids, respectively, as well as acetate and butyrate. Degradation pathways were proposed based on the intermediates detected by high performance liquid chromatography (HPLC) and HPLC coupled with mass spectrometry (LC-MS) and the detection of enzymes that catalyze reactions such as taxifolin isomerization, phloretin hydrolysis and phloroglucinol reduction. The dearomatizing phloroglucinol reductase, presumably part of all flavonoid degradation pathways, was purified and characterized. The gene encoding phloretin hydrolase was cloned from a E. ramulus gene library taking advantage of a newly developed fluorescence test for activity screening. Moreover, a new intermediate was discovered and identified by MS and 1H and 13C NMR analysis as alphitonin. To investigate the degradational potential of E. ramulus under in vivo conditions, germfree rats were associated with E. ramulus. Following the intragastric application of quercetin-3-glucoside, urine and feces of gnotobiotic rats were analyzed for degradational products originating from quercetin-3-glucoside. In feces of rats monoassociated with E. ramulus, 3,4-dihydroxyphenylacetic acid was found, indicating that this organism is able to cleave quercetin under in vivo conditions. To investigate in which way the dietary flavonoid content affects the cell counts of E. ramulus in the human intestinal tract, twelve human subjects consumed a flavonoid-free diet for one week and at one point during this period a large dose of flavonoids. Fecal samples from both phases of the study were analyzed by in-situ hybridization for total bacterial counts and counts of E. ramulus. Total cell counts and the cell counts of E. ramulus decreased significantly during the flavonoid-free period, while there was an increase in the E. ramulus counts of up to 10-fold during the flavonoid-rich period indicating that dietary secondary plant metabolites may have an influence on the intestinal microflora. E. ramulus is also capable of converting the isoflavonoids genistein and daidzein to the products 2-(4-hydroxyphenyl)-propionic acid and O-desmethylangolensin, respectively
Notes: DA - 20030515
IS - 0300-9831
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 117-39-5 (Quercetin)
RN - 21637-25-2 (isoquercitrin)
SB - IM

25. Bliss, R. M. Flavonoid Database: an antioxidant showcase. Agricultural Research [March 2003], 5-6. 2003.
Ref Type: Magazine Article
Ref ID: 691
Keywords: antioxidant/flavonoid

26. Bliss,R.M. 2004. Polyphenols Found in Cinnamon Mimic Job of Hormone. Agricultural Research April, 2004:19.
Ref ID: 650
Keywords: cinnamon/Insulin/polyphenols
Reprint: In File

27. Bohm,V. 2003. Secondary plant products--an interdisciplinary task with consumer relevance. Nahrung 47:221.
Ref ID: 80
Keywords: Carotenoids/Flavonoids/Food Technology/Health
Food/Human/metabolism/Phenols/Plant Physiology/Plants,Edible
Reprint: Not in File
Notes: DA - 20030918
IS - 0027-769X
LA - eng

PT - Editorial
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (polyphenols)
RN - 36-88-4 (Carotenoids)
SB - IM

28. Boker,L.K., Y.T.van der Schouw, M.J.De Kleijn, P.F.Jacques, D.E.Grobbee, and P.H.Peeters. 2002. Intake of dietary phytoestrogens by Dutch women. J Nutr. 132:1319-1328.
Ref ID: 258
Keywords: administration & dosage/Aged/analysis/Beverages/Chronic Disease/Cohort Studies/Diet Surveys/epidemiology/Estrogens,Non-Steroidal/Female/Fruit/Genistein/Human/Isoflavones/Lignans/Middle Aged/Netherlands/Nuts/Plant Preparations/Postmenopause/Questionnaires/Risk/Support,Non-U.S.Gov't/Tea/Vegetables/Wine/Women's Health
Reprint: Not in File
Abstract: Higher consumption of phytoestrogens might be protective against certain chronic diseases. Accurate quantification of habitual phytoestrogen intake is important for assessing associations between phytoestrogens and risk for certain diseases. The aim of this study was to estimate dietary intake of phytoestrogens in Dutch middle-aged and elderly women and to describe their main sources. Women were recruited between 1993 and 1997 and aged 50-69 y at enrollment (Prospect-EPIC; n = 17,357). A detailed food frequency questionnaire referring to the preceding year was filled in at recruitment. A literature search was conducted to obtain data regarding content of the isoflavones daidzein, genistein, formononetin, biochanin A, the coumestan coumesterol and the lignans matairesinol and secoisolariciresinol in relevant food items. Concentrations of each phytoestrogen in each food item were subsequently grouped by seven categories; group scores were multiplied by daily intakes of food items and then summed across food items to produce for each participant a total daily intake score for each phytoestrogen. Approximately 75% of participants were postmenopausal at recruitment. The mean age was 57 y. Geometric means of daily intake of daidzein, genistein, formononetin, biochanin A, coumesterol, matairesinol and secoisolariciresinol were 0.15, 0.16, 0.08, 0.001, <0.001, 0.07 and 0.93 mg, respectively. The main sources for isoflavones were peas and beans, nuts, grain products, coffee, tea and soy products. The main sources for coumestans were peas, beans and other vegetables. The main sources of lignans were grain products, fruit and alcoholic beverages (red and white wines). We conclude that intake levels of phytoestrogen in our study population are low; however, they are comparable with intake levels previously reported for other Western cohorts. In this population, phytoestrogen intake consisted largely of lignans
Notes: DA - 20020603
IS - 0022-3166
LA - eng
PT - Journal Article
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Lignans)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

29. Borek, C. Brain Food. The Natural Foods Merchandiser [March 2004], 114-117. 3-1-2004.
Ref Type: Magazine Article
Ref ID: 655
Keywords: Antioxidants/Brain/Food

30. Boxin,O., D.Huang, M.Hampsch-Woodill, J.A.Flanagan, and E.K.Deemer. 2004. Analysis of Antioxidant Activities of Common Vegetables Employing Oxygen Radical Absorbance

Capacity (ORAC) and Ferric Reducing Antioxidant Power (FRAP) Assays: A Comparative Study . J Agric Food Chem. 50:3122-3128.
Ref ID: 639
Keywords: Absorption/analysis/antioxidant/Antioxidants/chemistry/Comparative Study/Kinetics/methods/Onions/Oxygen/Peas/Spinach/Time/trends/Vegetables/ORAC/Assay
Reprint: In File
Abstract: A total of 927 freeze-dried vegetable samples, including 111 white cabbages, 59 carrots, 51 snap beans, 57 cauliflower, 33 white onions, 48 purple onions, 130 broccoli, 169 tomatoes, 25 beets, 88 peas, 88 spinach, 18 red peppers, and 50 green peppers, were analyzed using the oxygen radical absorption capacity (ORAC) and ferric reducing antioxidant capacity (FRAP) methods. The data show that the ORAC and FRAP values of vegetable are not only dependent on species, but also highly dependent on geographical origin and harvest time. The two antioxidant assay methods, ORAC and FRAP, also give different antioxidant activity trends. The discrepancy is extensively discussed based on the chemistry principles upon which these methods are built, and it is concluded that the ORAC method is chemically more relevant to chain-breaking antioxidants activity, while the FRAP has some drawbacks such as interference, reaction kinetics, and quantitation methods. On the basis of the ORAC results, green pepper, spinach, purple onion, broccoli, beet, and cauliflower are the leading sources of antioxidant activities against the peroxyl radicals.

31. Boyer,J., andR.H.Liu. 2004. Apple phytochemicals and their health benefits. Nutr. J 3:5.
Ref ID: 6
Keywords: antioxidant/Antioxidants/Asthma/Carotenoids/Catechin/Chlorogenic Acid/Cholesterol/Chronic Disease/Diet/Disease/flavonoid/Flavonoids/Fruit/Health/phenolics/Quercetin/Research/Risk/Vegetables
Reprint: Not in File
Abstract: Evidence suggests that a diet high in fruits and vegetables may decrease the risk of chronic diseases, such as cardiovascular disease and cancer, and phytochemicals including phenolics, flavonoids and carotenoids from fruits and vegetables may play a key role in reducing chronic disease risk. Apples are a widely consumed, rich source of phytochemicals, and epidemiological studies have linked the consumption of apples with reduced risk of some cancers, cardiovascular disease, asthma, and diabetes. In the laboratory, apples have been found to have very strong antioxidant activity, inhibit cancer cell proliferation, decrease lipid oxidation, and lower cholesterol. Apples contain a variety of phytochemicals, including quercetin, catechin, phloridzin and chlorogenic acid, all of which are strong antioxidants. The phytochemical composition of apples varies greatly between different varieties of apples, and there are also small changes in phytochemicals during the maturation and ripening of the fruit. Storage has little to no effect on apple phytochemicals, but processing can greatly affect apple phytochemicals. While extensive research exists, a literature review of the health benefits of apples and their phytochemicals has not been compiled to summarize this work. The purpose of this paper is to review the most recent literature regarding the health benefits of apples and their phytochemicals, phytochemical bioavailability and antioxidant behavior, and the effects of variety, ripening, storage and processing on apple phytochemicals
Notes: DA - 20040513
IS - 1475-2891
LA - ENG
PT - JOURNAL ARTICLE

32. Brandt,K., andJ.P.Molgaard. 2001. Organic agriculture: does it enhance or reduce the nutritional value of plant foods? J Sci Food Agric 81:924-931.
Ref ID: 414
Keywords: Agriculture/farming systems/Food/human health/organic/plant defense/Secondary metabolites
Reprint: In File

33. Brandt, K., Ejlerson, A., Norbaek, R., and Peterson, H. L. Effects of cultivation conditions for apples on growth rates of fruit fly larvae and contents of phenolics. Organic E-Prints . 2002.
Ref Type: In Press
Ref ID: 651
Keywords: conventional/cultivation/Fruit/organic/phenolics

34. Brandt, K., christensen, L. P., Hansen-Moller, J., Hansen, S. L., Haraldsdottir, J., Jespersen, L., Purup, S., Kharazmi, A., Barkhot, V., Frokiaer, H., and Kobaek-Larsen, M. Health promoting compounds in vegetables and fruis: a sysematic approach for identifying plan components with impact on human health. Trends in Food Science & Technology . 2004.
Ref Type: In Press
Ref ID: 674
Keywords: Health/Human/human health/Vegetables

35. Brandt, K., christensen, L. P., Hansen-Moller, J., Hansen, S. L., Haraldsdottir, J., Jespersen, L., Purup, S., Kharazmi, A., Barkhot, V., Frokiaer, H., and Kobaek-Larsen, M. Health promoting compounds in vegetables and fruis: a sysematic approach for identifying plan components with impact on human health. Trends in Food Science & Technology . 2004.
Ref Type: In Press
Ref ID: 619
Keywords: Health/Human/human health/Vegetables

36. Bravo,L. 1998. Polyphenols: chemistry, dietary sources, metabolism, and nutritional significance. Nutr. Rev 56:317-333.
Ref ID: 528
Keywords: administration & dosage/Animals/Antioxidants/Biological Availability/chemistry/Diet/Fermentation/Flavonoids/Food/Health/Human/metabolism/Minerals/Molecular Weight/Nutrition/pathology/Phenols/Polymers/Spain/Tannins
Reprint: Not in File
Abstract: Polyphenols constitute one of the most numerous and ubiquitous groups of plant metabolites and are an integral part of both human and animal diets. Ranging from simple phenolic molecules to highly polymerized compounds with molecular weights of greater than 30,000 Da, the occurrence of this complex group of substances in plant foods is extremely variable. Polyphenols traditionally have been considered antinutrients by animal nutritionists, because of the adverse effect of tannins, one type of polyphenol, on protein digestibility. However, recent interest in food phenolics has increased greatly, owing to their antioxidant capacity (free radical scavenging and metal chelating activities) and their possible beneficial implications in human health, such as in the treatment and prevention of cancer, cardiovascular disease, and other pathologies. Much of the literature refers to a single group of plant phenolics, the flavonoids. This review offers an overview of the nutritional effects of the main groups of polyphenolic compounds, including their metabolism, effects on nutrient bioavailability, and antioxidant activity, as well as a brief description of the chemistry of polyphenols and their occurrence in plant foods
Notes: DA - 19981218
IS - 0029-6643
LA - eng
PT - Journal Article
PT - Review
PT - Review, Academic
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Minerals)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (Tannins)
RN - 0 (polyphenols)
SB - IM

37. Caldwell,C.R. 2003. Alkylperoxyl Radical Scavenging Activity of Red Leaf Lettuce (Lactuca sativa L.) Phenolics. J Agric Food Chem. 51:4589-4595.
Ref ID: 34
Keywords: Agriculture/Human/United States/United States Department of Agriculture
Reprint: Not in File
Abstract: Although lettuce may provide relatively low levels of antioxidative phytochemicals which may contribute to human health, lettuce leaf extracts in fact contained compounds with high specific peroxyl radical scavenging activities. After determining the extraction conditions that minimized phenolic oxidation and produced the highest oxygen radical absorbance capacity (ORAC) values, the phenolic compounds from red leaf lettuce were separated by reverse-phase high-performance liquid chromatography (HPLC). The primary phenolic compounds in the leaf tissue extracts were mono- and dicaffeoyltartaric acid (CTA and DCTA), mono- and dicaffeoylquinic acid (CQA and DCQA), quercetin 3-malonylglucoside (QMG), quercetin 3-glucoside (QG), cyanidin 3-malonylglucoside (CMG), and an unknown phenolic ester (UPE). Significant levels of DCQA were only found after wounding. Using the new fluorescein-based ORAC assay procedures, fractions from the HPLC analyses were assayed for peroxyl radical absorbance capacity. Using absorbance to estimate concentration, the decreasing order of contribution to the total ORAC value of an extract from wounded tissue was QMG > DCQA > CMG > DCTA > UPE > QG > CTA. The decreasing order of the specific peroxyl radical scavenging activities was CMG > QG > DCTA > DCQA > QMG > UPE > CQA > CTA. Since the concentrations of plant flavonoid and phenolic acid esters are sensitive to environmental factors, this information may be used to develop pre- and postharvest conditions which increase the dietary benefits of leaf lettuce
Notes: DA - 20040106
IS - 0021-8561
LA - eng
PT - Journal Article
SB - IM

38. Campos,M.G., R.F.Webby, K.R.Markham, K.A.Mitchell, and A.P.Da Cunha. 2003. Age-induced diminution of free radical scavenging capacity in bee pollens and the contribution of constituent flavonoids. J Agric Food Chem. 51:742-745.
Ref ID: 173
Keywords: analysis/Animals/Antioxidants/Bees/chemistry/Flavonoids/Free Radical Scavengers/Health Food/Phenols/Pollen/Proteins/Time Factors
Reprint: Not in File
Abstract: Bee-collected pollen ("bee pollen") is promoted as a health food with a wide range of nutritional and therapeutic properties. The objective of the current study is to evaluate the contribution made through the free radical scavenging capability of bee-collected floval pollens by their flavonoid/phenolics constituents, and to determine whether this capability is affected by aging. The free radical scavenging effectiveness of a bee pollen (EC(50)) as measured by the DPPH method is shown to be determined by the nature and levels of the constituent floral pollens, which can be assayed via their phenolics profiles by HPLC. Each pure floral pollen has been found to possess a consistent EC(50) value, irrespective of its geographic origin or date of collection, and the EC(50) value is determined to a large extent (ca. 50%) by the nature and the levels of the pollen's flavonoids and phenolic acids. Non-phenolic antioxidants, possibly proteins, account for the balance of the activity. Pollen aging over 3 years is demonstrated to reduce the free radical scavenging activity by up to 50% in the most active floral pollens, which tend to contain the highest levels of flavonoids/phenolic acids. It is suggested that the freshness of a bee pollen may be determined from its free radical scavenging capacity relative to that of fresh bee pollen containing the same floral pollen mix
Notes: DA - 20030122
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Free Radical Scavengers)

RN - 0 (Phenols)
SB - IM

39. Cao,G., andR.L.Prior. 1998. Comparison of different analytical methods for assessing total antioxidant capacity of human serum. Clinical Chemistry 44:1309-1315.
Ref ID: 705
Keywords: antioxidant/comparison/Human/methods
Reprint: In File

40. Carbonaro,M., andM.Mattera. 2001. Polyphenoloxidase activity and polyphenol levels in organically and conventionally grown peach (*Prunus persica* L., cv. Regina bianca) and pear (*Pyrus communis* L., cv. Williams. Food Chemistry 72:419-424.
Ref ID: 661
Keywords: conventional/organic/peach/pears/polyphenols/Prunus
Reprint: In File

41. Carbonaro,M., M.Mattera, S.Nicoli, P.Bergamo, and M.Cappelloni. 2002. Modulation of antioxidant compounds in organic vs conventional fruit (peach, Prunus persica L., and pear, Pyrus communis L.). J Agric Food Chem. 50:5458-5462.
Ref ID: 225
Keywords: alpha-Tocopherol/analysis/Antioxidants/Ascorbic Acid/Catechol Oxidase/chemistry/Citric Acid/Comparative Study/Fertilizers/Flavonoids/Fruit/gamma-Tocopherol/Health Food/metabolism/Oxidation-Reduction/Phenols/Polymers/Prunus/Rosaceae/Support,Non-U.S.Gov't/Thiobarbituric Acid Reactive Substances
Reprint: Not in File
Abstract: Despite the increasing interest in organic products, knowledge about how different levels of fertilization affect nutritionally relevant components is still limited. The concentration of polyphenols and the activity of polyphenoloxidase (PPO), together with the content in ascorbic acid, citric acid, and alpha- and gamma-tocopherol, were assayed in conventional and organic peach (Prunus persica L., cv. Regina bianca) and pear (Pyrus communis L., cv. Williams). 2-Thiobarbituric acid reactive substances and the tocopherolquinone/alpha-tocopherol ratio were used as markers of oxidative damage in fruits. A parallel increase in polyphenol content and PPO activity of organic peach and pear as compared with the corresponding conventional samples was found. Ascorbic and citric acids were higher in organic than conventional peaches, whereas alpha-tocopherol was increased in organic pear. The concentration of oxidation products in organic samples of both fruits was comparable to that of the corresponding conventional ones. These data provide evidence that an improvement in the antioxidant defense system of the plant occurred as a consequence of the organic cultivation practice. This is likely to exert protection against damage of fruit when grown in the absence of pesticides
Notes: DA - 20020904
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Fertilizers)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (Thiobarbituric Acid Reactive Substances)
RN - 0 (gamma-Tocopherol)
RN - 0 (polyphenols)
RN - 50-81-7 (Ascorbic Acid)
RN - 59-02-9 (alpha-Tocopherol)
RN - 77-92-9 (Citric Acid)

RN - EC 1.10.3.1 (Catechol Oxidase)
SB - IM

42. Chassy, A. W., Prieto, R., Morales, M. J., Bui, L., Van Horn, M, Hammerstone, J., Shapiro, H., and Mitchell, A. E. Does organic griculture enhance the nutritive quality of tomatoes, bell peppers and on compared to conventional agriculture? 7-16-2004. 7-12-2004.
Ref Type: Conference Proceeding
Ref ID: 662
Keywords: Agriculture/conventional/organic/quality

43. Chu, F. F., Esworthy, R. S., and Doroshow, J. H. Role of Se-Dependent Glutathoine peroxidases in gastrointestinal inflammation and cancer. Free Radical Biology & Medicine . 4-2-2004.
Ref Type: In Press
Ref ID: 653
Keywords: Inflammation/Peroxidase

44. Cohen,J.H., A.R.Kristal, and J.L.Stanford. 2000. Fruit and Vegetable Intakes and Prostate Cancer Risk 12. J Natl Cancer Inst 92:61-68.
Ref ID: 1828
Keywords: Carotenoids/Case-Control Studies/comparison/diagnosis/Diet/Food/Fruit/methods/Odds Ratio/Prostate/Questionnaires/Risk/Vegetables
Reprint: In File
Abstract: BACKGROUND: There is extensive and consistent evidence that high fruit and vegetable intakes are associated with decreased risks of many cancers, but results for prostate cancer risk have been inconsistent. We studied the associations of fruit and vegetable intakes with prostate cancer risk in a population-based, case-control study of men under 65 years of age. METHODS: Case participants were 628 men from King County (Seattle area), WA, who were newly diagnosed with prostate cancer. Control participants were 602 men recruited from the same underlying population and frequency matched to case participants by age. Self-administered food-frequency questionnaires were used to assess diet over the 3- to 5-year period before diagnosis or recruitment. Daily nutrient intakes were calculated by use of a nutrient database with recently updated analytic values for carotenoids. Odds ratios for prostate cancer risk associated with foods and nutrients were calculated by use of unconditional logistic regression. RESULTS: No associations were found between fruit intake and prostate cancer risk. The adjusted odds ratio (ORs) for the comparison of 28 or more servings of vegetables per week with fewer than 14 servings per week was 0.65 (95% confidence interval [CI] = 0.45-0.94), with a two-sided P for trend = .01. For cruciferous vegetable consumption, adjusted for covariates and total vegetable intake, the OR for comparison of three or more servings per week with less than one serving per week was 0.59 (95% CI = 0.39-0.90), with a two-sided P for trend = .02. The OR for daily intake of 2000 {micro}g or more lutein plus zeaxanthin compared with an intake of less than 800 {micro}g was 0.68 (95% CI = 0.45-1.00). CONCLUSION: These results suggest that high consumption of vegetables, particularly cruciferous vegetables, is associated with a reduced risk of prostate cancer

45. Connor,A.M., J.J.Luby, J.F.Hancock, S.Berkheimer, and E.J.Hanson. 2002. Changes in fruit antioxidant activity among blueberry cultivars during cold-temperature storage. J Agric Food Chem. 50:893-898.
Ref ID: 719
Keywords: analysis/Anthocyanins/antioxidant/Antioxidants/Blueberry/Blueberry Plant/chemistry/Cold/Color/cultivars/Food Preservation/Fruit/Hydrogen-Ion Concentration/Phenols/Plants/quality/Time/Time Factors
Reprint: Not in File
Abstract: Antioxidant activity, total phenolic content, anthocyanin content, and six other fruit characters including titratable acid concentration, soluble solids, firmness, and percentage of bruised berries were determined for nine blueberry (Vaccinium L. sp.) cultivars at harvest and

at various postharvest intervals after storage at 5 degrees C. Berries from MSU-58, Brigitta, and Legacy stored successfully for 7 weeks, Bluegold stored for 3-5 weeks, Bluecrop, Elliott, and Nelson stored for 3 weeks, and Jersey and Little Giant stored for fewer than 3 weeks. During the time they retained marketable quality, one cultivar (MSU-58) demonstrated a 29% increase in antioxidant activity. None of the cultivars showed a significant decrease from the harvest antioxidant activity value during storage. Antioxidant activity, total phenolic content, and anthocyanin content were strongly correlated with each other ($r = 0.87$-0.99, $P < 0.01$). All three parameters were moderately correlated with soluble solids ($r = 0.47$, $P <$ or $= 0.05$; $r = 0.44$, $P <$ or $= 0.05$; and $r = 0.64$, $P <$ or $= 0.01$, respectively), and antioxidant activity and total phenolic content were both moderately correlated with pH ($r = 0.53$ and 0.49, respectively; $P <$ or $= 0.05$). However, antioxidant activity, total phenolic content, and anthocyanin content showed no correlation with firmness, percent severely bruised berries, or weight loss. Antioxidant activity and total phenolic content at harvest both correlated with titratable acidity at harvest ($r = 0.68$, $P <$ or $= 0.05$ and $r = 0.70$, $P <$ or $= 0.05$, respectively) on a cultivar mean basis. Berries from Elliott were also harvested from plants at two levels of bush ripeness (30-50% and 60-80% ripe berries on plants) and separated into three fruit maturity classes on the basis of percent blue color. The level of bush ripeness had no significant effect on antioxidant activity, total phenolic content, or anthocyanin content; however, fruit maturity had a significant effect on antioxidant activity, total phenolic content, and anthocyanin content, and bush ripeness x fruit maturity interactions were significant for these three traits. Berries with 50-75% blue coloration harvested from bushes with 60-80% mature fruit showed a significant increase in antioxidant activity, total phenolic content, and anthocyanin content during the first 3 weeks in storage. Our results demonstrate that increases in antioxidant activity, total phenolic content, and anthocyanin content may occur in the blueberry during cold storage and are cultivar-dependent. The increases that occur in immature fruit, such as in Elliott, may be advantageous for producers who wish to delay marketing of the fruit
Notes: DA - 20020206
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Phenols)
SB - IM

46. Cooper,D.A., A.L.Eldridge, and J.C.Peters. 1999. Dietary carotenoids and lung cancer: a review of recent research. Nutr. Rev. 57:133-145.
Ref ID: 1850
Keywords: administration & dosage/Animals/beta Carotene/Carotenoids/Diet/Epidemiologic Studies/Food/Human/Lung/Lung Neoplasms/prevention & control/Research/Risk/therapeutic use/trends
Reprint: Not in File
Abstract: Several hundred carotenoid research studies have been published since 1996, when two major intervention trials showed a lack of protective effect of beta-carotene supplements against lung cancer. Recent epidemiologic studies continue to show an association between high dietary intake of beta-carotene and lower risk of lung cancer. New research is attempting to clarify the apparently contradictory results of intervention and epidemiologic studies. Promising areas of investigation include characterizing biologic activities of carotenoids and gaining further insight into whether they may serve primarily as markers for a healthy lifestyle or diet
Notes: DA - 19990730
IS - 0029-6643
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial

RN - 36-88-4 (Carotenoids)
SB - IM

47. Cooper,D.A., A.L.Eldridge, and J.C.Peters. 1999. Dietary carotenoids and certain cancers, heart disease, and age-related macular degeneration: a review of recent research. Nutr. Rev. 57:201-214.
Ref ID: 1849
Keywords: beta Carotene/Breast cancer/Breast Neoplasms/Cardiovascular Diseases/Carotenoids/Case-Control Studies/Cohort Studies/Diet/Disease/Epidemiologic Studies/epidemiology/Female/Fruit/fruits/Head and Neck Neoplasms/Heart/Human/Lung/Macular Degeneration/Male/Nutrition Policy/Nutritional Requirements/prevention & control/Prostate/Prostatic Neoplasms/Research/Risk/Risk Factors/Vegetables
Reprint: Not in File
Abstract: Key epidemiologic studies show associations between high dietary intakes of certain carotenoid-containing fruits and vegetables and reduced risk of prostate cancer, breast cancer, head and neck cancers, cardiovascular disease, and age-related macular degeneration, although overall the evidence is inconsistent. Little is known about the potential biochemical mechanisms whereby carotenoids might protect against disease, and human intervention trials are limited to high dose beta-carotene, which is not protective against lung cancer or cardiovascular disease. Authoritative scientific organizations continue to emphasize increased consumption of fruits and vegetables but do not make specific recommendations for carotenoids because of a lack of data that directly link them to disease reduction
Notes: DA - 19990903
IS - 0029-6643
LA - eng
PT - Journal Article
PT - Review
PT - Review, Academic
RN - 36-88-4 (Carotenoids)
SB - IM

48. Croft,K.D. 1998. The chemistry and biological effects of flavonoids and phenolic acids. Ann. N. Y. Acad. Sci 854:435-442.
Ref ID: 519
Keywords: Absorption/Antioxidants/Beverages/Biological Availability/biosynthesis/chemistry/Diet/Flavonoids/Health/Human/Hydroxybenzoic Acids/In Vitro/Intervention Studies/Intestinal Absorption/metabolism/pharmacokinetics/Plants/Plants,Edible/Structure-Activity Relationship/Support,Non-U.S.Gov't/Wine
Reprint: Not in File
Abstract: Flavonoids and phenolic acids are widely distributed in higher plants and form part of the human diet. Recent interest in these substances has been stimulated by the potential health benefits arising from the antioxidant activity of these polyphenolic compounds. This review outlines the basic chemistry, biosynthesis, and structure-activity relationships of these compounds with respect to their antioxidant activity. Although there is considerable in vitro evidence establishing antioxidant activity for polyphenolics found in the diet, there are few studies in humans on the absorption and bioavailability of these compounds. The possible in vivo antioxidant effects of the flavonoids is even less well understood. For example, controlled human intervention studies with beverages, such as red wine, that are rich in polyphenolic compounds, have yielded conflicting results. Our own work and that of others suggests that the final effects of such beverages may be a balance between the well-described prooxidant effects of alcohol and its metabolism and the antioxidant effects of the polyphenolic constituents. There is a need for further studies to increase our understanding of the absorption and in vivo biological effects of this family of compounds
Notes: DA - 19990224
IS - 0077-8923
LA - eng

PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Hydroxybenzoic Acids)
RN - 29656-58-4 (phenolic acid)
SB - IM

49. Dajas,F., F.Rivera-Megret, F.Blasina, F.Arredondo, J.A.Abin-Carriquiry, G.Costa, C.Echeverry, L.Lafon, H.Heizen, M.Ferreira, and A.Morquio. 2003. Neuroprotection by flavonoids. Braz. J Med Biol Res. 36:1613-1620.
Ref ID: 42
Keywords: Arteriosclerosis/Central Nervous System Diseases/drug therapy/Flavonoids/Human/metabolism/Neuroprotective Agents/Oxidative Stress/Support,Non-U.S.Gov't/therapeutic use
Reprint: Not in File
Abstract: The high morbidity, high socioeconomic costs and lack of specific treatments are key factors that define the relevance of brain pathology for human health and the importance of research on neuronal protective agents. Epidemiological studies have shown beneficial effects of flavonoids on arteriosclerosis-related pathology in general and neurodegeneration in particular. Flavonoids can protect the brain by their ability to modulate intracellular signals promoting cellular survival. Quercetin and structurally related flavonoids (myricetin, fisetin, luteolin) showed a marked cytoprotective capacity in in vitro experimental conditions in models of predominantly apoptotic death such as that induced by medium concentrations (200 M) of H2O2 added to PC12 cells in culture. Nevertheless, quercetin did not protect substantia nigra neurons in vivo from an oxidative insult (6-hydroxydopamine), probably due to difficulties in crossing the blood-brain barrier. On the other hand, treatment of permanent focal ischemia with a lecithin/quercetin preparation decreased lesion volume, showing that preparations that help to cross the blood-brain barrier may be critical for the expression of the effects of flavonoids on the brain. The hypothesis is advanced that a group of quercetin-related flavonoids could become lead molecules for the development of neuroprotective compounds with multitarget anti-ischemic effects
Notes: DA - 20031210
IS - 0100-879X
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Neuroprotective Agents)
SB - IM

50. Daniel,O., M.S.Meier, J.Schlatter, and P.Frischknecht. 1999. Selected phenolic compounds in cultivated plants: ecologic functions, health implications, and modulation by pesticides. Environ. Health Perspect. 107 Suppl 1:109-114.
Ref ID: 506
Keywords: analysis/Animals/chemistry/Coronary Disease/Coumarins/Ecology/Flavonoids/Health/Heart/Herbicides/Human/pharmacology/Phenols/Plants/prevention & control/Risk/Risk Factors/Stilbenes/toxicity
Reprint: Not in File
Abstract: Phenolic compounds are widely distributed in the plant kingdom. Plant tissues may contain up to several grams per kilogram. External stimuli such as microbial infections, ultraviolet radiation, and chemical stressors induce their synthesis. The phenolic compounds resveratrol, flavonoids, and furanocoumarins have many ecologic functions and affect human health. Ecologic functions include defense against microbial pathogens and herbivorous animals. Phenolic compounds may have both beneficial and toxic effects on human health.

Effects on low-density lipoproteins and aggregation of platelets are beneficial because they reduce the risk of coronary heart disease. Mutagenic, cancerogenic, and phototoxic effects are risk factors of human health. The synthesis of phenolic compounds in plants can be modulated by the application of herbicides and, to a lesser extent, insecticides and fungicides. The effects on ecosystem functioning and human health are complex and cannot be predicted with great certainty. The consequences of the combined natural and pesticide-induced modulating effects for ecologic functions and human health should be further evaluated
Notes: DA - 20000727
IS - 0091-6765
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Coumarins)
RN - 0 (Flavonoids)
RN - 0 (Herbicides)
RN - 0 (Phenols)
RN - 0 (Stilbenes)
RN - 501-36-0 (resveratrol)
SB - IM

51. Dávalos,A., C.Gómez-Cordovés, and B.Bartolomé. 2004. Extending Applicability of the Oxygen Radical Absorbance Capacity (ORAC-Fluorescein) Assay . J Agric Food Chem. 52:48-54.
Ref ID: 643
Keywords: antioxidant/Antioxidant activity/ORAC/fluorescein/phenolics/wine/dietary antioxidant supplements/conventional/Flavonoids/Food/Oxygen/Solutions/Wine/Assay
Reprint: Not in File
Abstract: The ORAC-fluorescein (ORAC-FL) method recently validated using automatic liquid handling systems has now been adapted to manual handling and using a conventional fluorescence microplate reader. As calculated for Trolox, the precision of the method was <3.0, expressed as percent coefficient of variation. The accuracy of the method was <2.3, expressed as percent variation of the mean. The detection and quantification limits were those corresponding to 0.5- and 1-M Trolox standard solutions, respectively. The method has been applied to 10 pure compounds (benzoic and cinnamic acids and aldehydes, flavonoids, and butylated hydroxyanisole), to 30 white, rose, and bottled- and oak-aged red wines, and to 7 commercial dietary antioxidant supplements. All samples exhibited a good linear response with concentration. As seen by other methodologies, the chemical structure of a compound determines its antioxidant activity (ORAC-FL value). Of particular interest were the results with oak-aged red wines from different vintages (1989-2002) that confirm influence of vintage, but not origin of the oak, in the antioxidant activity of wines from the same variety. Dietary antioxidant supplements presented a great variability (170-fold difference) in their antioxidant potency. This work proves applicability of the ORAC-FL assay in evaluating the antioxidant activity of diverse food samples.

52. De Kleijn,M.J., Y.T.van der Schouw, P.W.Wilson, H.Adlercreutz, W.Mazur, D.E.Grobbee, and P.F.Jacques. 2001. Intake of dietary phytoestrogens is low in postmenopausal women in the United States: the Framingham study(1-4). J Nutr. 131:1826-1832.
Ref ID: 354
Keywords: administration & dosage/analysis/chemistry/classification/Diet/Estrogens,Non-Steroidal/Female/Food/Food Preferences/Fruit/Genistein/Health/Human/Isoflavones/Lignans/Molecular Structure/Netherlands/Plant Preparations/Postmenopause/Questionnaires/Support,Non-U.S.Gov't/Support,U.S.Gov't,Non-P.H.S./United States/Women's Health
Reprint: Not in File
Abstract: Many plants that are consumed contain phytoestrogens. Only a few published studies have examined the dietary intake of phytoestrogens in the general Western population. The potentially positive health effects of phytoestrogens might be of relevance to postmenopausal

women. The aim of the present study was to estimate the intake of dietary isoflavones, coumestans and lignans by healthy Western postmenopausal women. For this purpose, we studied 964 postmenopausal, Caucasian women who participated in the Framingham Offspring Study and completed the Willett food-frequency questionnaire (FFQ). By searching the medical and agricultural literature and contacting experts, we identified food sources of phytoestrogens. The concentrations of the different isoflavones, coumestrol and lignans in each food in the FFQ were scored in seven categories and multiplied by the serving size of the food and the frequency of its consumption. The estimated daily median intake of the isoflavone daidzein was 39 microg (24-57 microg); of genistein, 70 microg (28-120 microg); of formononetin, 31 microg (13-44 microg); and of biochanin A, 6 microg (2-11 microg). Median total intake of isoflavones was 154 microg (99-235 microg). The main sources of isoflavones were beans and peas. The estimated daily intake of coumestans was 0.6 microg (0.2-1.7 microg), with broccoli as the main source. The estimated daily median intake of matairesinol was 19 microg (12-28 microg) and of secoisolariciresinol 560 microg (399-778 microg). The median total intake of lignans was 578 microg (416-796 microg). The main source of the lignans was fruits. The daily dietary intake of phytoestrogens in healthy postmenopausal Caucasian women in the United States is <1 mg
Notes: DA - 20010531
IS - 0022-3166
LA - eng
PT - Journal Article
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Lignans)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

53. Dewanto,V., X.Wu, K.K.Adom, and R.H.Liu. 2002. Thermal processing enhances the nutritional value of tomatoes by increasing total antioxidant activity. J Agric Food Chem. 50:3010-3014.
Ref ID: 5
Keywords: analysis/antioxidant/Antioxidants/Ascorbic Acid/chemistry/Chronic Disease/consumer/Disease/flavonoid/Flavonoids/Food/Food Handling/Fruit/Heat/lycopene/Lycopersicon esculentum/Nutritive Value/phenolics/Phenols/Research/Risk/Time Factors/Tomato/Vegetables/Vitamin C
Reprint: Not in File
Abstract: Processed fruits and vegetables have been long considered to have lower nutritional value than their fresh commodities due to the loss of vitamin C during processing. This research group found vitamin C in apples contributed < 0.4% of total antioxidant activity, indicating most of the activity comes from the natural combination of phytochemicals. This suggests that processed fruits and vegetables may retain their antioxidant activity despite the loss of vitamin C. Here it is shown that thermal processing elevated total antioxidant activity and bioaccessible lycopene content in tomatoes and produced no significant changes in the total phenolics and total flavonoids content, although loss of vitamin C was observed. The raw tomato had 0.76 +/- 0.03 micromol of vitamin C/g of tomato. After 2, 15, and 30 min of heating at 88 degrees C, the vitamin C content significantly dropped to 0.68 +/- 0.02, 0.64 +/- 0.01, and 0.54 +/- 0.02 micromol of vitamin C/g of tomato, respectively ($p < 0.01$). The raw tomato had 2.01 +/- 0.04 mg of trans-lycopene/g of tomato. After 2, 15, and 30 min of heating at 88 degrees C, the trans-lycopene content had increased to 3.11+/- 0.04, 5.45 +/- 0.02, and 5.32 +/- 0.05 mg of trans-lycopene/g of tomato ($p < 0.01$). The antioxidant activity of raw tomatoes was 4.13 +/- 0.36 micromol of vitamin C equiv/g of tomato. With heat treatment at 88 degrees C for 2, 15, and 30 min, the total antioxidant activity significantly increased to 5.29 +/- 0.26, 5.53 +/- 0.24, and 6.70 +/- 0.25 micromol of vitamin C equiv/g of tomato, respectively ($p < 0.01$). There were no significant changes in either total phenolics or total flavonoids. These findings indicate thermal processing enhanced the nutritional value of tomatoes by increasing the bioaccessible lycopene content and total antioxidant activity and are against the notion that processed fruits and vegetables have lower nutritional value than fresh

produce. This information may have a significant impact on consumers' food selection by increasing their consumption of fruits and vegetables to reduce the risks of chronic diseases
Notes: DA - 20020501
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

54. Di Stefano,R. 1999. Advances in the study of secondary metabolites occurring in grapes and wines. Drugs Exp. Clin Res 25:53-56.
Ref ID: 11
Keywords: analysis/Anthocyanins/chemistry/Chemistry,Analytical/flavonoid/Flavonoids/Human/metabolism/Research/Rosales/Terpenes/Wine
Reprint: Not in File
Abstract: In recent years significant advances have been made in the field of secondary metabolites belonging to the polyphenol group and precursors to varietal aromas. Following research on anthocyanins, flavonoids, flavans and phenolic acids of the benzoic and cinnamic type, hydroxystilbenes were thoroughly investigated because of their pharmacological importance. Their presence in the components of grape skins was first noted in 1980. Varietal aromas have mostly been found in their glycoside form. They are known to belong to the class of terpene alcohols, norisoprenoids and benzenoids, though their role in human metabolism is as yet little known
Notes: DA - 19990901
IS - 0378-6501
LA - eng
PT - Journal Article
PT - Review
PT - Review Literature
RN - 0 (Terpenes)
SB - IM

55. Dietrych-Szostak,D., andW.Oleszek. 1999. Effect of processing on the flavonoid content in buckwheat (Fagopyrum esculentum Moench) grain. J Agric Food Chem. 47:4384-4387.
Ref ID: 729
Keywords: analysis/Buckwheat/chemistry/Chromatography,High Pressure Liquid/cultivation/flavonoid/Flavonoids/Heat/Human/isolation & purification/Plant Components/Quercetin/Rutin/Seeds/Soil/Temperature
Reprint: Not in File
Abstract: Six flavonoids have been isolated and identified in buckwheat grain. These are rutin, orientin, vitexin, quercetin, isovitexin, and isoorientin. Rutin and isovitexin are the only flavonoid components of buckwheat seeds while hulls contain all six identified compounds. The total flavonoid concentration in the seeds was 18.8 and in the hulls 74 mg/100 g of dry matter. Dehulling the grain by using different temperature regimes resulted in drastic reductions of the total flavonoid concentration in the grain (by 75% of the control) and smaller but significant (15-20%) reduction in the hulls
Notes: DA - 20000211
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
SB - IM

56. Dixon,R.A., andC.L.Steele. 1999. Flavonoids and isoflavonoids - a gold mine for metabolic engineering. Trends Plant Sci 4:394-400.
Ref ID: 494
Keywords: biosynthesis/Diet/Flavonoids/Human
Reprint: Not in File
Abstract: Flavonoid-derived plant natural products have long been known to function as floral pigments for the attraction of insect pollinators, as signal molecules for beneficial microorganisms in the rhizosphere, and as antimicrobial defense compounds. New functions for flavonoid compounds continue to be found, particularly in plant-microorganism signaling, and there has been an explosion of interest in flavonoids and isoflavonoids as health-promoting components of the human diet. The flavonoid and isoflavonoid pathways are probably the best characterized natural product pathway in plants, and are therefore excellent targets for metabolic engineering. Manipulation of flavonoid biosynthesis can be approached via several strategies, including sense or antisense manipulation of pathway genes, modification of the expression of regulatory genes, or generation of novel enzymatic specificities by ra-tional approaches based on emerging protein structure data. In addition, activation tagging provides a novel approach for the discovery of uncharacterized structural and regulatory genes of flavonoid biosynthesis
Notes: DA - 19990927
IS - 1360-1385
LA - ENG
PT - JOURNAL ARTICLE

57. Dragsted,L.O. 2003. Antioxidant actions of polyphenols in humans. Int. J Vitam. Nutr. Res. 73:112-119.
Ref ID: 128
Keywords: Antioxidants/Biological Markers/Catechin/chemistry/DNA Damage/Flavonoids/Human/Lipid Peroxidation/metabolism/Molecular Structure/Oxidative Stress/pharmacology/Phenols/Plants,Edible/Polymers/Proteins
Reprint: Not in File
Abstract: Many polyphenols are potent antioxidants in foods and model systems and they have therefore very naturally been linked with the hypothesis that their redox actities may confer them with specific health benefits. Their prevalence in plant derived foods, which are generally accepted as healthy has supported this view and inspired researchers to conduct human intervention trails with polyphenol rich food items in order to investigate their ability to counteract oxidative stress. Several biomarkers have gained widespread use to assess oxidative damage and antioxidative defence capabilities in humans. These markers pioneer our knowledge about factors related to oxidative stress in proteins, lipids and DNA and present results indicate that oxidative damage may be very localised and that refined markers may be necessary in order to disentangle the complex local factors which determine the extent of oxidative damage in different molecular structures. The present text reviews the human short-term intervention studies with polyphenol-rich foods, which address their impact on biomarkers of oxidative damage and antioxidative defence. None of the oxidative damage markers seem to be consistently affected by polyphenol-rich foods or to be consistently related to one another. The most consistent finding regarding antioxidative defence markers is a postprandial effect on plasma antioxidative capacity after ingestion of foods rich in catechins and complex procyanidins
Notes: DA - 20030515
IS - 0300-9831
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Biological Markers)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)

RN - 0 (Proteins)
RN - 0 (polyphenols)
SB - IM

58. Drewnowski,A., andC.Gomez-Carneros. 2000. Bitter taste, phytonutrients, and the consumer: a review. Am. J Clin Nutr. 72:1424-1435.
Ref ID: 400
Keywords: analysis/Cardiovascular Diseases/Flavonoids/Food/Food Analysis/Food Industry/Food Preferences/Fruit/Glucosinolates/Health/Human/Isoflavones/Isothiocyanates/Neoplasms/Phenols/Plant Proteins/prevention & control/Proteins/Risk/Support,U.S.Gov't,P.H.S./Taste/therapeutic use/Vegetables/Washington
Reprint: Not in File
Abstract: Dietary phytonutrients found in vegetables and fruit appear to lower the risk of cancer and cardiovascular disease. Studies on the mechanisms of chemoprotection have focused on the biological activity of plant-based phenols and polyphenols, flavonoids, isoflavones, terpenes, and glucosinolates. Enhancing the phytonutrient content of plant foods through selective breeding or genetic improvement is a potent dietary option for disease prevention. However, most, if not all, of these bioactive compounds are bitter, acrid, or astringent and therefore aversive to the consumer. Some have long been viewed as plant-based toxins. As a result, the food industry routinely removes these compounds from plant foods through selective breeding and a variety of debittering processes. This poses a dilemma for the designers of functional foods because increasing the content of bitter phytonutrients for health may be wholly incompatible with consumer acceptance. Studies on phytonutrients and health ought to take sensory factors and food preferences into account
Notes: DA - 20001219
IS - 0002-9165
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Isothiocyanates)
RN - 0 (Phenols)
RN - 0 (Plant Proteins)
SB - AIM
SB - IM

59. Dumas,Y., M.Dadomo, G.Di Lucca, and P.Grolier. 2003. Effects of environmental factors and agricultural techniques on antioxidant content of tomatoes. J Sci Food Agric 83:369-382.
Ref ID: 701
Keywords: antioxidant
Reprint: In File

60. DuPont,M.S., Z.Mondin, G.Williamson, and K.R.Price. 2000. Effect of variety, processing, and storage on the flavonoid glycoside content and composition of lettuce and endive. J Agric Food Chem. 48:3957-3964.
Ref ID: 728
Keywords: analysis/chemistry/Chromatography,High Pressure Liquid/consumer/Diet/flavonoid/Flavonoids/Food/Food Handling/Glucosides/Glycosides/Health/Lettuce/Light/Quercetin/Research/Spectrum Analysis,Mass/Support,Non-U.S.Gov't/Time
Reprint: Not in File
Abstract: Eight varieties of lettuce (Lactuca sativum) and three varieties of endive (Cichorium endivia) were analyzed for flavonoid composition and content. Total flavonoid contents, expressed as units of aglycon for fresh material, were in the ranges of 0.3-229 microg/g for

lettuce and 44-248 microg/g for endive. Five quercetin conjugates [quercetin 3-O-galactoside, quercetin 3-O-glucoside, quercetin 3-O-glucuronide, quercetin 3-O-(6-O-malonyl)glucoside, and quercetin 3-O-rhamnoside] and luteolin 7-O-glucuronide were measured in the green-leafed lettuce and an additional two cyanidin conjugates [cyanidin 3-O-glucoside and cyanidin 3-O-[(6-O-malonyl)glucoside]] in the red-leafed varieties. Three kaempferol conjugates [kaempferol 3-O-glucoside, kaempferol 3-O-glucuronide, and kaempferol 3-O-[6-O-malonyl)glucoside]] were measured in each of the endive varieties. The presence and identity of kaempferol 3-O-(6-O-malonyl)glucoside in endive was shown for the first time. Shredding of lettuce leaf followed by exposure to light produced significant losses of the flavonoid moiety in the green oak leaf (94%), red oak leaf (43%), iceberg (36%), green batavia (25%), lollo biondo (24%), and lollo rosso (6%) samples, whereas cos and green salad bowl samples did not show an overall loss. Shredding of endive also produced loss of the flavonoid moiety in escarole (32%), fine frisee (13%), and coarse frisee (8%). Significant demalonation was observed for both the quercetin and cyanidin glucosides in lettuce, whereas a similar degradation of the kaempferol analogue was found in endive tissue. Storage of whole heads of both lettuce and endive in the dark at 1 degrees C and 98% humidity for 7 days resulted in losses of total flavonol glycosides in the range of 7-46%. The identification of the amounts, position of substitution, and nature of the sugars is important for understanding the potential bioavailability and biological activities of flavonoids in salads
Notes: DA - 20001113
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Glycosides)
SB - IM

61. Duranti,M., M.R.Lovati, V.Dani, A.Barbiroli, A.Scarafoni, S.Castiglioni, C.Ponzone, and P.Morazzoni. 2004. The alpha' subunit from soybean 7S globulin lowers plasma lipids and upregulates liver beta-VLDL receptors in rats fed a hypercholesterolemic diet. J Nutr. 134:1334-1339.
Ref ID: 748
Keywords: administration & dosage/Animals/blood/Cholesterol/Cholesterol,Dietary/Diet/Dose-Response Relationship,Drug/Globulins/isolation & purification/Lipids/Liver/Male/metabolism/pharmacology/Protein Isoforms/Proteins/Rats/Rats,Sprague-Dawley/Receptors,LDL/Soybean Proteins/Support,Non-U.S.Gov't/Up-Regulation
Reprint: Not in File
Abstract: Recent data concerning the effect of soybean 7S globulin subunits on the upregulation of LDL receptors in Hep G2 cells identified the alpha' subunit as the candidate responsible for this biological effect. In vivo evaluation of this subunit on cholesterol homeostasis was hampered by the lack of suitable amounts of alpha' chain. A novel separation procedure allowed us to investigate the effects of alpha' subunit administration on plasma cholesterol and triglyceride levels, as well as on the activity of liver beta-VLDL receptors of rats fed a hypercholesterolemic (HC) diet. Rats were divided into 9 groups fed the following diets for 28 d: standard diet; HC diet; HC diets + 5, 10, and 20 mg/(kg body weight. d) of alpha' subunit; HC diets + 50, 100, and 200 mg/(kg body weight. d) of soybean 7S globulin; HC diet + 200 mg/(kg body weight. d) clofibrate. The highest dose of the alpha' subunit decreased plasma cholesterol and triglycerides 36 and 34%, respectively, in rats fed the HC diet; 10-fold amounts clofibrate reduced plasma cholesterol and triglycerides 38 and 41%. The activity of liver beta-VLDL receptors of rats fed the HC diet with the highest dose of the alpha' subunit had a 96% increase in binding compared with the HC diet group, thus restoring the receptor activity to that of rats fed the standard diet. These results represent the first in vivo evidence of both the plasma lipid-lowering properties and the upregulation of liver beta-VLDL receptors induced by the soybean alpha' subunit
Notes: DA - 20040602
IS - 0022-3166

LA - eng
PT - Journal Article
RN - 0 (Cholesterol, Dietary)
RN - 0 (Globulins)
RN - 0 (Lipids)
RN - 0 (Protein Isoforms)
RN - 0 (Receptors, LDL)
RN - 0 (Soybean Proteins)
RN - 0 (VLDL receptor)
RN - 0 (beta-conglycinin)
SB - IM

62. Duthie,G.G., P.T.Gardner, and J.A.Kyle. 2003. Plant polyphenols: are they the new magic bullet? Proc. Nutr. Soc. 62:599-603.
Ref ID: 37
Keywords: administration & dosage/adverse effects/Antioxidants/Biological Availability/chemistry/Diet/Evidence-Based Medicine/Flavonoids/Fruit/Health Food/Health Promotion/Human/Intestinal Absorption/metabolism/Phenols/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Abstract: Epidemiological evidence suggests that diets rich in fruit and vegetables decrease the risk of premature mortality from major clinical conditions, including cancer and heart disease. However, it is not yet clear which components or combination of components in fruit and vegetables are protective and what is their mechanism of action. Such scientific uncertainty does not seem to inhibit the marketing of a huge range of plant-based concoctions, promoted as 'magic bullets' for optimum health. For example, the purported health-giving properties of plant polyphenols represent a case in which enthusiastic marketing claims may far exceed the current scientific evidence. Even when good experimental evidence exists, results need to be interpreted with caution in relation to human health benefits, as polyphenols may have limited bioavailability and may also be extensively metabolised. In addition, some polyphenols can be toxic and mutagenic in some cell culture systems. Until more is known about the activity and metabolic fate of polyphenols in the body, it would be better for the consumer to increase fruit and vegetable intake, and also to be wary of claims that these compounds are a panacea for good health
Notes: DA - 20031224
IS - 0029-6651
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (polyphenols)
SB - IM

63. Dwyer,J.T., andJ.Peterson. 2004. Classification and Categorization of Food Components. Nutrition Today 35:184-186.
Ref ID: 646
Keywords: classification/flavanols/Flavonoids/Food/Food Analysis/Food Composition
Reprint: In File

64. Ebert,T., B.Kleine-Gunk, J.E.Altwein, K.Miller, and P.Mallmann. 2002. [Dietary prevention of carcinomas of the breast and prostate: fundamental and practical aspects of the Nutritional Cancer Prevention (NCP) program]. Dtsch. Med Wochenschr. 127:1392-1396.
Ref ID: 244
Keywords: administration & dosage/Alcohol Drinking/Breast Neoplasms/complications/diet

therapy/Diet,Fat-Restricted/Estrogens,Non-Steroidal/Exercise/Female/Fruit/Health Promotion/Human/Isoflavones/Male/Obesity/Plant Preparations/prevention & control/Primary Prevention/Prostate/Prostatic Neoplasms/Vegetables
Reprint: Not in File
Notes: DA - 20020620
IS - 0012-0472
LA - ger
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

65. Ehlenfeldt,M.K., andR.L.Prior. 2001. Oxygen Radical Absorbance Capacity (ORAC) and Phenolic and Anthocyanin Concentrations in Fruit and Leaf Tissues of Highbush Blueberry . J Agric Food Chem. 49:2222-2227.
Ref ID: 642
Keywords: analysis/Anthocyanins/antioxidant/Antioxidants/inheritance/cultivars/Fruit/Gallic Acid/Oxygen/Parents/Plants/ORAC/Blueberry
Reprint: Not in File
Abstract: Antioxidant capacity, as measured by oxygen radical absorbance capacity (ORAC), and total phenolic and total anthocyanin contents were evaluated in fruit tissues of 87 highbush blueberry (*Vaccinium corymbosum* L.) and species-introgressed highbush blueberry cultivars. ORAC and phenolic levels were evaluated in leaf tissues of the same materials. Average values for ORAC, phenolics, and anthocyanins in fruit were 15.9 ORAC units, 1.79 mg/g (gallic acid equivalents), and 0.95 mg/g (cyanidin-3-glucoside equivalents), respectively. Cv. Rubel had the highest ORAC per gram of fresh weight values, at 31.1 units, and cv. Elliott had the highest values on the basis of ORAC per square centimeter of surface area. In leaf tissue, values for both ORAC and phenolics were significantly higher than in fruit tissue, with mean values of 490 ORAC units and 44.80 mg/g (gallic acid equivalents), respectively. Leaf ORAC had a low, but significant, correlation with fruit phenolics and anthocyanins, but not with fruit ORAC. An analysis of ORAC values versus calculated midparent values in 11 plants from the 87-cultivar group in which all parents were tested suggested that, across cultivars, ORAC inheritance is additive. An investigation of ORAC values in a family of 44 cv. Rubel × Duke seedlings showed negative epistasis for ORAC values, suggesting Rubel may have gene combinations contributing to ORAC that are broken up during hybridization.

66. Eisen,B., Y.Ungar, and E.Shimoni. 2003. Stability of isoflavones in soy milk stored at elevated and ambient temperatures. J Agric Food Chem. 51:2212-2215.
Ref ID: 710
Keywords: analysis/Beverages/chemistry/Drug Stability/Food/Genistein/Health/Heat/Isoflavones/Kinetics/soy/Soybeans/Support,Non-U.S.Gov't/Support,U.S.Gov't,Non-P.H.S./Temperature/Thermodynamics/Time
Reprint: Not in File
Abstract: Soy isoflavones are widely recognized for their potential health benefits. The increased use of traditional and new food products calls for the assessment of their stability during processing and storage. The present study examines the stability of genistein and daidzein derivatives in soy milk. Soy milk was stored at ambient and elevated temperatures, and the change in isoflavone concentration was monitored with time. Genistin loss in time showed typical first-order kinetics, with rate constants ranging from 0.437-3.871 to 61-109 days(-1) in the temperature ranges of 15-37 and 70-90 degrees C, respectively. The temperature dependence of genistin loss followed the Arrhenius relation with activation energies of 7.2 kcal/mol at ambient temperatures and 17.6 kcal/mol at elevated temperatures. At early stages

of soy milk storage at 80 and 90 degrees C, the 6' '-O-acetyldaidzin concentration increased, followed by a slow decrease. The results obtained in this study can serve as a basis for estimating the shelf life of soy milk as related to its genistin content
Notes: DA - 20030402
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Isoflavones)
RN - 446-72-0 (Genistein)
RN - 486-66-8 (daidzein)
SB - IM

67. Erlund,I., E.Meririnne, G.Alfthan, and A.Aro. 2001. Plasma kinetics and urinary excretion of the flavanones naringenin and hesperetin in humans after ingestion of orange juice and grapefruit juice. J Nutr. 131:235-241.
Ref ID: 390
Keywords: Adult/analysis/Antioxidants/Area Under Curve/Beverages/Biological Availability/Biological Markers/blood/chemistry/Chromatography,High Pressure Liquid/Citrus/Diet/Estrogen Antagonists/Female/Finland/Flavanones/Flavonoids/Health/Hesperidin/Human/Intestinal Absorption/Kinetics/Male/Metabolic Clearance Rate/methods/pharmacokinetics/Support,Non-U.S.Gov't/Urinalysis/urine
Reprint: Not in File
Abstract: The flavanones naringenin and hesperetin exhibit estrogenic, anticarcinogenic and antioxidative properties. Orange juice and grapefruit juice contain high amounts of these compounds, and therefore their intake from the diet can be relatively high. No data are available regarding plasma concentrations or plasma kinetics of flavanones. The objectives of this study were to develop methods allowing the analysis of naringenin and hesperetin from plasma and urine and to study their plasma kinetics and urinary excretion. We also wanted to assess whether plasma or urine flavanone concentrations can be used as biomarkers of intake. Healthy volunteers ingested orange juice (five women and three men) or grapefruit juice (two women and three men) once (8 mL/kg). Eleven blood samples and urine were collected between 0 and 24 h after juice administration. Flavanones were analyzed by HPLC with electrochemical detection. Naringenin and hesperetin were bioavailable from the studied juices, but interindividual variation in bioavailability was remarkable. The resulting plasma concentrations were comparatively high, and the peak plasma concentrations (C(max)) were 0.6 +/- 0.4 micromol/L (means +/- SD) for naringenin from orange juice and 6.0 +/- 5.4 micromol/L for naringenin from grapefruit juice. The corresponding value for hesperetin from orange juice was 2.2 +/- 1.6 micromol/L. The elimination half-lives were between 1.3 and 2.2 h, and therefore plasma concentrations reflect short-term intake. The relative urinary excretion varied depending on the flavanone source and dose and was 30.2 +/- 25.5% and 1.1 +/- 0.8% for naringenin from grapefruit juice and orange juice, respectively, and 5.3 +/- 3.1% for hesperetin from orange juice. The considerable difference in the relative urinary excretion of naringenin from the two juices was most likely caused by dose-dependent renal clearance rather than differences in bioavailability (as indicated by the similar C(max)-to-dose ratios). The results indicate that urine flavanone concentrations are not good biomarkers of dietary intake. We conclude that because of the relatively high concentrations of flavanones in plasma after ingestion of orange juice or grapefruit juice, considerable health effects could ensue in individuals consuming them regularly
Notes: DA - 20010222
IS - 0022-3166
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Biological Markers)
RN - 0 (Estrogen Antagonists)
RN - 0 (Flavanones)

RN - 0 (Flavonoids)
RN - 480-41-1 (naringenin)
RN - 520-26-3 (Hesperidin)
RN - 520-33-2 (hesperetin)
SB - IM

68. Felsot,A., andJ.Rosen. 2003. Comment on Comparison of the Total Phenolic and Ascorbic Acid Content of Freeze-Dried and Air-Dried Marionberry, Strawberry, and Corn Grown Using Conventional, Organic, and Sustainable Agricultural Practices. J. Agric. Food Chem. 52:146-149.
Ref ID: 658
Keywords: Ascorbic Acid/comparison/conventional/organic/strawberries
Reprint: In File

69. Ferguson,L.R., M.Philpott, and N.Karunasinghe. 2004. Dietary cancer and prevention using antimutagens. Toxicology 198:147-159.
Ref ID: 706
Keywords: Adolescent/Adult/Aged/analysis/Animals/Antimutagenic Agents/antioxidant/Antioxidants/Ascorbic Acid/blood/Breast cancer/Carotenoids/Cereals/chemically induced/Diet/Dietary Fiber/DNA Damage/Female/flavonoid/Flavonoids/Food Analysis/Free Radicals/Fruit/genetics/Glutathione/Health/Human/Incidence/Male/Meat/Middle Aged/Minerals/Mutagens/Neoplasms/New Zealand/Nutrition/Obesity/polyphenols/prevention & control/Probiotics/Prostate/Risk/Risk Factors/Selenium/Soil/Support,Non-U.S.Gov't/therapeutic use/trends/Vegetables/Vitamin E/Vitamins
Reprint: Not in File
Abstract: Many of the cancers common in the Western world, including colon, prostate and breast cancers, are thought to relate to dietary habits. Of the known risk factors, many will act through increasing the probability of mutation. Recognised dietary mutagens include cooked meat compounds, N-nitroso compounds and fungal toxins, while high meat and saturated fat consumption, increasing rates of obesity, and regular consumption of alcohol and tobacco are all dietary trends that could indirectly enhance the probability of mutation. However, there are significant difficulties in implementing and sustaining major dietary changes necessary to reduce the population's intake of dietary mutagens. Dietary antimutagens may provide a means of slowing progression toward cancer, and be more acceptable to the population. Consideration of genetic mechanisms in cancer development suggest several distinct targets for intervention. Strategies that reduce mutagen uptake may be the most simple intervention, and the one least likely to result in undesirable side effects. Certain (but not all) types of dietary fibres appear to reduce mutation through this mechanism, as may certain probiotics and large planar molecules such as chlorophyllin. Antioxidants have been suggested to scavenge free radicals, and prevent their interactions with cellular DNA. Small molecule dietary antioxidants include ascorbic acid, Vitamin E, glutathione, various polyphenols and carotenoids. We found a statistically significant relationship between colon cancer incidence and soil selenium status across different regions of New Zealand. Additionally, a study of middle-aged men suggested that blood selenium levels lower than 100 ng/ml were inadequate for repair or surveillance of oxidative (and other) DNA damage. We suggest that selenium will be an important antimutagen, at least in New Zealand, possibly through antioxidant effects associated with selenium's role in enzymes associated with endogenous repair of DNA damage. Modulation of xenobiotic metabolizing enzymes is well recognised as cancer-protective, and is a property of various flavonoids and a number of sulfur-containing compounds. Many fruits and vegetables contain compounds that will protect against mutation and cancer by several mechanisms. For example, kiwifruit has antioxidant effects and may also affect DNA repair enzymes. Dietary folate may be a key factor in maintenance of methylation status, while enhanced overall levels of vitamins and minerals may retard the development of genomic instability. The combination of each of these factors could provide a sustainable intervention that might usefully delay the development of cancer in New Zealand and other populations. Although there are a range of

potentially antimutagenic fruits, vegetables and cereals available to these populations, current intake is generally below the level necessary to protect from dietary or endogenous mutagens. Dietary supplementation may provide an alternative approach
Notes: DA - 20040512
IS - 0300-483X
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antimutagenic Agents)
RN - 0 (Antioxidants)
RN - 7782-49-2 (Selenium)
SB - IM

70. Ferguson, P. J., Kurowska, E., Freeman, D. J., Chambers, A. F., and Koropatnick, D. J. A flavonoid fraction from cranberry extract inhibits proliferation of human tumor cell lines. World Cancer Research Fund International/American Institute for Cancer Reseach International Research Conference on Food, Nutrition & Cancer. 2002.
Ref Type: Unenacted Bill/Resolution
Ref ID: 704
Keywords: Breast cancer/Cell Line/flavonoid/Human

71. Ferreira,D., S.Guyot, N.Marnet, I.Delgadillo, C.M.Renard, and M.A.Coimbra. 2002. Composition of phenolic compounds in a Portuguese pear (Pyrus communis L. var. S. Bartolomeu) and changes after sun-drying. J Agric Food Chem. 50:4537-4544.
Ref ID: 720
Keywords: analysis/Arbutin/Catechin/chemistry/Chromatography,High Pressure Liquid/Coumaric Acids/Desiccation/Fruit/pears/phenolics/Phenols/Polymers/Rosaceae/Solvents/Sunlight/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: The composition of phenolic compounds of a Portuguese pear cultivar (Pyrus communis L. var. S. Bartolomeu) was determined by HPLC after thioacidolysis. The average concentration of phenolic compounds in pear harvested at commercial maturity stage was 3.7 g per kg of fresh pulp. Procyanidins were the predominant phenolics (96%), with a mean degree of polymerization (mDP) of 13-44; hydroxycinnamic acids (2%), arbutin (0.8%), and catechins (0.7%) were also present. The most abundant monomer in the procyanidin structures was (-)-epicatechin (99%), which was found as extension and terminal units; (+)-catechin (1%) was found only as a terminal unit. Sun-drying of these pears caused a decrease of 64% (on a dry pulp basis) in the total amount of native phenolic compounds. Hydroxycinnamic acids and procyanidins showed the largest decrease; the B2 procyanidin was not found at all in the sun-dried pear. Less affected were arbutin and catechins. In the sun-dried pear, the procyanidins with high mDP became unextractable in the solvents used
Notes: DA - 20020724
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Coumaric Acids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 154-23-4 (Catechin)
RN - 4852-22-6 (procyanidin)
RN - 497-76-7 (Arbutin)
SB - IM

72. Ferreira,D., S.Guyot, N.Marnet, I.Delgadillo, C.M.Renard, and M.A.Coimbra. 2002. Composition of phenolic compounds in a Portuguese pear (Pyrus communis L. var. S. Bartolomeu) and

changes after sun-drying. J Agric Food Chem. 50:4537-4544.
Ref ID: 12
Keywords: analysis/Arbutin/Catechin/chemistry/Chromatography,High Pressure Liquid/Coumaric Acids/Desiccation/Fruit/pears/phenolics/Phenols/Polymers/Rosaceae/Solvents/Sunlight/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: The composition of phenolic compounds of a Portuguese pear cultivar (Pyrus communis L. var. S. Bartolomeu) was determined by HPLC after thioacidolysis. The average concentration of phenolic compounds in pear harvested at commercial maturity stage was 3.7 g per kg of fresh pulp. Procyanidins were the predominant phenolics (96%), with a mean degree of polymerization (mDP) of 13-44; hydroxycinnamic acids (2%), arbutin (0.8%), and catechins (0.7%) were also present. The most abundant monomer in the procyanidin structures was (-)-epicatechin (99%), which was found as extension and terminal units; (+)-catechin (1%) was found only as a terminal unit. Sun-drying of these pears caused a decrease of 64% (on a dry pulp basis) in the total amount of native phenolic compounds. Hydroxycinnamic acids and procyanidins showed the largest decrease; the B2 procyanidin was not found at all in the sun-dried pear. Less affected were arbutin and catechins. In the sun-dried pear, the procyanidins with high mDP became unextractable in the solvents used
Notes: DA - 20020724
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Coumaric Acids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 154-23-4 (Catechin)
RN - 4852-22-6 (procyanidin)
RN - 497-76-7 (Arbutin)
SB - IM

73. Feskanich,D., R.G.Ziegler, D.S.Michaud, E.L.Giovannucci, F.E.Speizer, W.C.Willett, and G.A.Colditz. 2000. Prospective Study of Fruit and Vegetable Consumption and Risk of Lung Cancer Among Men and Women
7. J Natl Cancer Inst 92:1812-1823.
Ref ID: 1829
Keywords: Clinical Trials/Diet/Follow-Up Studies/Fruit/fruits/Health/Lung/methods/Prospective Studies/Risk/Smoking/Time/Vegetables
Reprint: In File
Abstract: Background: Diets high in fruits and vegetables have been shown to be associated with a lower risk of lung cancer. {beta}-Carotene was hypothesized to be largely responsible for the apparent protective effect, but this hypothesis was not supported by clinical trials. Methods: We examined the association between lung cancer risk and fruit and vegetable consumption in 77 283 women in the Nurses' Health Study and 47 778 men in the Health Professionals' Follow-up Study. Diet was assessed with the use of a food-frequency questionnaire that included 15 fruits and 23 vegetables. We used logistic regression models to estimate relative risks (RRs) of lung cancer within each cohort. All statistical tests were two-sided. Results: We documented 519 lung cancer cases among the women and 274 among the men. Total fruit and vegetable consumption was associated with a modestly lower risk of lung cancer among the women but not among the men. The RR for the highest versus lowest quintile of intake was 0.79 (95% confidence interval [CI] = 0.59-1.06) among the women and 1.12 (95% CI = 0.74-1.69) among the men after adjustment for smoking status, quantity of cigarettes smoked per day, time since quitting smoking, and age at initiation of smoking. However, total fruit and vegetable consumption was associated with a lower risk of lung cancer among never smokers in the combined cohorts, although the reduction was not statistically significant (RR = 0.63; 95% CI = 0.35-1.12 in the highest tertile). Conclusion: Higher fruit and

vegetable intakes were associated with lower risks of lung cancer in women but not in men. It is possible that the inverse association among the women remained confounded by unmeasured smoking characteristics, although fruits and vegetables were protective in both men and women who never smoked

74. Finesilver, T. Comparison of Food Quality of Organically versus Conventionally Grown Plant Foods. 1989.
Ref Type: Report
Ref ID: 687
Keywords: comparison/Food/food quality/quality

75. Finley,J.W. 2003. Reduction of cancer risk by consumption of selenium-enriched plants: enrichment of broccoli with selenium increases the anticarcinogenic properties of broccoli. J Med Food 6:19-26.
Ref ID: 35
Keywords: 9,10-Dimethyl-1,2-benzanthracene/administration & dosage/Agriculture/analysis/Animals/Brassica/chemically induced/chemistry/Colonic Neoplasms/Diet/Drug Interactions/Food/Garlic/Glutathione/Glutathione Peroxidase/growth & development/Health Promotion/Human/Incidence/Mammary Neoplasms,Experimental/metabolism/methods/Mice/Neoplasms/Nutrition/pathology/Peroxidase/pharmacokinetics/Plants/Plants,Edible/prevention & control/Rats/Research/Risk/Selenium/Soil/United States/United States Department of Agriculture
Reprint: Not in File
Abstract: Plant-based diets and phytochemicals present in plants are associated with decreased risk of cancer. Brassica species, and broccoli in particular, are associated with reduced risk of several important cancers. Selenium (Se) is an essential nutrient that is covalently bound in a number of different chemical forms found in plants. Broccoli accumulates Se many-fold beyond the concentration of Se in the soil, and the chemical form of Se in broccoli is similar to the chemical form in high-Se garlic, a food with unique chemoprotective properties. Se from broccoli grown to accumulate more than 500 micro g Se/g did not accumulate in rat tissues or increase glutathione peroxidase enzyme activity to the same extent as Se salts or seleno-amino acids. Se from high-Se broccoli decreased the incidence of aberrant crypts in rats with chemically induced colon cancer by more than 50%, compared with controls. Se from high-Se broccoli also decreased the incidence of mammary tumors in rats treated with 7,12-dimethylbenz(a)anthracene (DMBA) and tumor number and volume in APC(min) mice. These results suggest that development of methods to increase the natural accumulation of Se in broccoli may greatly enhance its health-promoting properties
Notes: DA - 20030613
IS - 1096-620X
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 57-97-6 (9,10-Dimethyl-1,2-benzanthracene)
RN - 7782-49-2 (Selenium)
RN - EC 1.11.1.9 (Glutathione Peroxidase)
SB - IM

76. Folts,J.D. 2002. Potential health benefits from the flavonoids in grape products on vascular disease. Adv. Exp. Med Biol 505:95-111.
Ref ID: 243
Keywords: Adult/Animals/Antioxidants/Arteriosclerosis/Beverages/Blood Platelets/chemistry/Cholesterol/Clinical Trials/Coronary Disease/Dogs/drug effects/Drug Evaluation,Preclinical/Endothelium,Vascular/Female/Flavonoids/Free Radicals/Fruit/Health/Heart/Human/isolation & purification/Macaca fascicularis/Macrophages/Male/Middle

Aged/Models,Animal/Muscle,Smooth,Vascular/Nitric
Oxide/pharmacology/physiology/Platelet Aggregation Inhibitors/prevention &
control/Rabbits/Risk/therapeutic use/Vegetables/Vitis/Wine
Reprint: Not in File
Abstract: In the dog, monkey, a nd human we have shown that 5 ml/kg of red wine or 5-10 ml/kg of purple grape juice but not orange or grapefruit juice inhibits platelet activity, and protects against epinephrine activation of platelets. Red wine and purple grape juice enhances platelet and endothelial production of nitric oxide (Fitzpatrick et al., 1993, Parker et al., 2000). This is thought to be one of the mechanisms whereby purple grape juice significantly improved endothelial function in 15 patients with coronary artery disease. The consumption of purple grape juice by the patients also offered increased protection against LDL cholesterol oxidation, even though all the patients were also taking another antioxidant vitamin E, 400 IU/day. The number of people and animals in these studies was small; however, each one acted as their own control as measurements were made in each before, and then after consumption of red wine or purple grape juice. Thus these studies are thought to be significant. We feel that the results of these studies are encouraging and justify further research on larger numbers of subjects. This suggests that the flavonoids in purple grape juice and red wine may inhibit the initiation of atherosclerosis by one or more of the mechanisms described above. It will take years to fully characterize the potential benefits of daily consumption of red wine or purple grape juice for maintaining a healthy heart. Based on the existing evidence of antiplatelet and antioxidant benefits and improved endothelial function from red wine and purple grape juice, it seems reasonable to suggest that moderate amounts of red wine or purple grape juice be included among the 5-7 daily servings of fruits and vegetables per day as recommended by the American Heart Association to help reduce the risk of developing cardiovascular disease
Notes: DA - 20020626
IS - 0065-2598
LA - eng
PT - Journal Article
PT - Review
PT - Review, Academic
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Free Radicals)
RN - 0 (Platelet Aggregation Inhibitors)
RN - 10102-43-9 (Nitric Oxide)
SB - IM

77. Formica,J.V., andW.Regelson. 1995. Review of the biology of Quercetin and related bioflavonoids. Food Chem. Toxicol. 33:1061-1080.
Ref ID: 752
Keywords: Allium/Animals/Anti-Inflammatory Agents/Antineoplastic
Agents/antioxidant/Antioxidants/Antiviral
Agents/biosynthesis/Brassica/Carcinogens/Cardiovascular System/chemistry/Coronary
Disease/Diet/Disease/drug
effects/Eicosanoids/epidemiology/etiology/Europe/flavonoid/Flavonoids/Food/Human/I
mmune System/Incidence/metabolism/microbiology/Mutagens/pharmacology/Platelet
Aggregation/prevention & control/Quercetin/toxicity/Vegetables/Wine
Reprint: Not in File
Abstract: The French paradox is a dietary anomaly which has focused attention on the Mediterranean diet. Epidemiological studies revealed that this diet, replete in flavonoid-rich foods (Allium and Brassica vegetables, and red wine), correlated with the increased longevity and decreased incidence of cardiovascular disease seen in these populations. The most frequently studied flavonoid, quercetin, has been shown to have biological properties consistent with its sparing effect on the cardiovascular system. Quercetin and other flavonoids have been shown to modify eicosanoid biosynthesis (antiprostanoid and anti-inflammatory responses), protect low-density lipoprotein from oxidation (prevent atherosclerotic plaque formation), prevent platelet aggregation (antithrombic effects), and promote relaxation of

cardiovascular smooth muscle (antihypertensive, antiarrhythmic effects). In addition, flavonoids have been shown to have antiviral and carcinostatic properties. However, flavonoids are poorly absorbed from the gut and are subject to degradation by intestinal micro-organisms. The amount of quercetin that remains biologically available may not be of sufficient concentration, theoretically, to explain the beneficial effects seen with the Mediterranean diet. The role of flavonoids may transcend their presence in food. The activity of flavonoids as inhibitors of reverse transcriptase suggests a place for these compounds in the control of retrovirus infections, such as acquired immunodeficiency syndrome (AIDS). In addition to specific effects, the broad-modulating effects of flavonoids as antioxidants, inhibitors of ubiquitous enzymes (ornithine carboxylase, protein kinase, calmodulin), and promoters of vasodilatation and platelet disaggregation can serve as starting material for drug development programmes
Notes: DA - 19961022
IS - 0278-6915
LA - eng
PT - Journal Article
PT - Review
PT - Review, Academic
RN - 0 (Anti-Inflammatory Agents)
RN - 0 (Antineoplastic Agents)
RN - 0 (Antiviral Agents)
RN - 0 (Carcinogens)
RN - 0 (Eicosanoids)
RN - 0 (Flavonoids)
RN - 0 (Mutagens)
RN - 117-39-5 (Quercetin)
SB - IM
SB - X

78. Fox,J.E., M.Starcevic, K.Y.Kow, M.E.Burow, and J.A.McLachlan. 2004. Endocrine disrupters and flavonoid signialling. Nature 413:128-129.
Ref ID: 648
Keywords: endocrine disruptor/Flavonoids/Nitrogen Fixation
Reprint: In File

79. Frankel,E.N. 1989. The antioxidant and nutritional effects of tocopherols, ascorbic acid and beta-carotene in relation to processing of edible oils. Bibl. Nutr. Dieta 297-312.
Ref ID: 739
Keywords: Agriculture/alpha-Tocopherol/antioxidant/Antioxidants/Ascorbic Acid/beta Carotene/Carotenoids/Dietary Fats/Dietary Fats,Unsaturated/Food/Free Radicals/Human/Iron/Lipids/metabolism/Nutritive Value/Oxygen/pharmacology/Research/Vitamin E
Reprint: Not in File
Abstract: Tocopherols belong to a class of phenolic antioxidants which can inhibit lipid autoxidation by scavenging free radicals and by reacting with singlet oxygen. In vegetable oils alpha-tocopherol inhibits the effects of singlet oxygen during sensitized photoxidation. Ascorbic acid has a complex multi-function, acting as a hydrogen donor, as a metal inactivator, and as a peroxide destroyer. beta-Carotene protects lipids by interfering with photosensitized oxidation, and behaves as a reducing agent by trapping radicals. After processing of vegetable oils, about 60-70% of the tocopherols remain in the oil. However, the tocopherol content in processed vegetable oils, is generally above the optimum range for antioxidant activity. On the other hand, beta-carotene is almost completely removed during processing of vegetable oils. For antioxidant purposes, both beta-carotene and ascorbic acid must be added to vegetable oils after deodorization. The vitamin E activity of alpha-tocopherol may be attributed to its very efficient inhibition of in vivo lipid oxidation. In addition to its singlet oxygen quenching properties, beta-carotene has good radical-trapping properties at low partial pressures of oxygen, which prevail in healthy tissues. In biological systems, alpha-tocopherol and beta-

carotene exhibit synergism by reinforcing their mutual activities. Synergism also takes place in a cascade where ascorbic acid can be regenerated at the expense of more oxidizable substrates. Our results suggest that singlet oxygen and free radical species may significantly contribute to the fluorescence formed from the interaction of DNA with linolenate hydroperoxides in the presence of iron and ascorbic acid. A better understanding of the biological effects of lipid oxidation products is needed to conserve the nutritional value of foods containing unsaturated lipids
Notes: DA - 19890707
IS - 0067-8198
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Dietary Fats, Unsaturated)
RN - 0 (Free Radicals)
RN - 1406-18-4 (Vitamin E)
RN - 36-88-4 (Carotenoids)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

80. Frankenfeld,C.L., R.E.Patterson, T.F.Kalhorn, H.E.Skor, W.N.Howald, and J.W.Lampe. 2002. Validation of a soy food frequency questionnaire with plasma concentrations of isoflavones in US adults. J Am. Diet. Assoc. 102:1407-1413.
Ref ID: 202
Keywords: administration & dosage/Adult/analysis/blood/chemistry/Cross-Sectional Studies/Diet Surveys/Female/Genistein/Health/Human/Isoflavones/Male/Mass Fragmentography/Questionnaires/Reproducibility of Results/Soybeans/standards/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./Washington
Reprint: Not in File
Abstract: OBJECTIVE: To validate assessment of soy intake using food frequency questionnaires (FFQs) compared with plasma isoflavone (genistein and daidzein) concentrations. DESIGN: Cross-sectional analysis of soy isoflavone intake and plasma analysis of isoflavones. SUBJECTS: 77 men and women, age range 20 to 40 years, recruited from the Seattle metropolitan area. MAIN OUTCOME MEASURES: Isoflavone intake was determined from responses to a 40-item soy FFQ and from tofu and soymilk intake assessed as part of a comprehensive FFQ used for the Women's Health Initiative (WHI FFQ). Isoflavone concentrations in fasting blood samples were determined by liquid chromatography-mass spectrometry. STATISTICAL ANALYSES: Correlation coefficients were calculated for: a) isoflavone intake assessed by the soy FFQ and the WHI FFQ, b) intake assessed by the soy FFQ and plasma isoflavone concentrations, and c) intake assessed by the WHI FFQ and plasma isoflavone concentrations. RESULTS: Isoflavone intake was highly correlated between the soy FFQ and the WHI FFQ ($r = 0.84$). Genistein and daidzein intakes determined by the soy FFQ were significantly correlated with plasma concentrations ($r = 0.53$ and 0.45, respectively). Isoflavone intake assessed from the WHI FFQ was also correlated with plasma concentration ($r = 0.46$ and 0.45). Soymilk and tofu were the two major contributors to isoflavone intake (38.6%). CONCLUSIONS: A soy-specific, 40-item FFQ assessed isoflavone intake with good validity. Isoflavone intake assessed by the WHI FFQ (tofu and soymilk) had lower correlations with plasma concentrations compared with the soy FFQ. Nonetheless, assessment of the two foods is a reasonably good marker for soy food consumption in this sample
Notes: DA - 20021024
IS - 0002-8223
LA - eng
PT - Journal Article
PT - Validation Studies
RN - 0 (Isoflavones)

RN - 446-72-0 (Genistein)
RN - 486-66-8 (daidzein)
SB - AIM
SB - IM

81. Fuleki,T., andJ.M.Ricardo-Da-Silva. 2003. Effects of cultivar and processing method on the contents of catechins and procyanidins in grape juice. J Agric Food Chem. 51:640-646.
Ref ID: 64
Keywords:
Agriculture/analysis/Beverages/Catechin/chemistry/Cold/cultivars/flavonoid/Flavonoids/Flavonols/Food Handling/Fruit/Heat/methods/Ontario/Species Specificity/Vitis
Reprint: Not in File
Abstract: The aim of the presented work was to study the effect of pressing method, pasteurization, cultivar, and vintage on the content of (+)-catechin, (-)-epicatechin, and nine procyanidins in grape juice. The results showed that the concentration of these flavan-3-ols in the juice was influenced, in decreasing order of importance, by pressing method, cultivar, pasteurization, and vintage. Cold pressing without maceration was the least and hot pressing after maceration at 60 degrees C for 60 min the most effective method for extracting the flavan-3-ols. Pasteurization increased the concentration of catechins in cold-pressed juices, but it decreased concentrations in hot-pressed juices. The concentration of most procyanidins was increased by pasteurization. Among the white cultivars, Seyval and Niagara were highest in procyanidins and Elvira and Chardonnay were highest in catechins. Vincent, Foch, and Baco were the red cultivars highest in catechins, and Vincent also had the highest content of procyanidins
Notes: DA - 20030122
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 154-23-4 (Catechin)
RN - 4852-22-6 (procyanidin)
SB - IM

82. Gahler,S., K.Otto, and V.Bohm. 2003. Alterations of vitamin C, total phenolics, and antioxidant capacity as affected by processing tomatoes to different products. J Agric Food Chem. 51:7962-7968.
Ref ID: 711
Keywords: analysis/antioxidant/Antioxidants/Ascorbic Acid/Beverages/chemistry/flavonoid/Flavonoids/Food Handling/Heat/Hydroxybenzoic Acids/Lycopersicon
esculentum/methods/Nutrition/phenolics/Phenols/polyphenols/Time/Tomato/Vitamin C/Water
Reprint: Not in File
Abstract: This study was conducted to investigate the antioxidant vitamin C, the polyphenol content, and the hydrophilic antioxidant capacity of tomato juice, baked tomatoes, tomato sauce, and tomato soup. During the production of tomato juice and during the preparation of the other tomato products, samples were taken after different times, respectively, after each particular production step. High-performance liquid chromatography was used to determine the content of vitamin C. The total phenolics content was analyzed spectrophotometrically by using the Folin-Ciocalteu method. The hydrophilic antioxidant capacity was measured by using three different methods: the Trolox equivalent antioxidant capacity assay, the ferric reducing antioxidant power test, and the photochemiluminescence assay. The vitamin C contents of the tomato products decreased during the thermal processing of tomatoes. In contrast, the total phenolics concentration and the water soluble antioxidant capacity increased
Notes: DA - 20031223
IS - 0021-8561
LA - eng

PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Hydroxybenzoic Acids)
RN - 0 (Phenols)
RN - 0 (polyphenols)
RN - 29656-58-4 (phenolic acid)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

83. Galati, G and O'Brien, P. J. Potential Toxicity of Flavonoids and other Dietary Phenolics: Significance for thier Chemoproventive and Anticancer Properties. Free Radical Biology & Medicine . 4-28-2004.
Ref Type: In Press
Ref ID: 663
Keywords: flavonoid/Flavonoids/phenolics/toxicity

84. Galati,G., S.Teng, M.Y.Moridani, T.S.Chan, and P.J.O'Brien. 2000. Cancer chemoprevention and apoptosis mechanisms induced by dietary polyphenolics. Drug Metabol. Drug Interact. 17:311-349.
Ref ID: 385
Keywords: Animals/Apoptosis/biosynthesis/Cell Division/chemistry/Diet/DNA,Neoplasm/Down-Regulation/drug effects/Female/Flavonoids/Fruit/Health/Human/Male/Mice/Mice,Nude/Neoplasms/Nucleic Acid Synthesis Inhibitors/Ontario/pharmacology/Phytotherapy/prevention & control/Rats/Signal Transduction/therapeutic use/Tumor Cells,Cultured/Vegetables
Reprint: Not in File
Abstract: This review summarises current knowledge on the various molecular chemopreventive or therapeutic mechanisms that may be involved when the administration of flavonoids or polyphenols prevented chemical carcinogenesis in animal models. These mechanisms can be subdivided into the following: 1) the molecular mechanisms involved in preventing carcinogen metabolic activation, 2) the molecular mechanisms for preventing tumour cell proliferation by inactivation or downregulation of prooxidant enzymes or signal transduction enzymes, 3) the molecular cell death mechanisms for the induction of tumour cell death (apoptosis) and the molecular mechanisms for the inhibition of isolated mitochondria functions. Many of the flavonoids and polyphenols found in diets, supplements or herbal medicine were also ranked using "accelerated cytotoxic mechanism screening" by a combinatorial approach utilising isolated rat hepatocytes. A strong correlation of an early collapse of the mitochondrial membrane potential and cell death was found for most of the cytotoxic polyphenols but did not occur with non-toxic polyphenols. This screening could prove useful for eliminating polyphenols that have the potential for adverse health effects and for selecting safe and effective polyphenolic candidates for further development as supplements for preventing cancer or cardiovascular disease. Safety concerns of flavonoid/polyphenol supplements are also reviewed
Notes: DA - 20010126
IS - 0792-5077
LA - eng
PT - Journal Article
RN - 0 (DNA, Neoplasm)
RN - 0 (Flavonoids)
RN - 0 (Nucleic Acid Synthesis Inhibitors)
SB - IM

85. Garcia-Closas,R., A.Agudo, C.A.Gonzalez, and E.Riboli. 1998. Intake of specific carotenoids and flavonoids and the risk of lung cancer in women in Barcelona, Spain. Nutr. Cancer 32:154-158.
Ref ID: 516
Keywords: administration & dosage/beta Carotene/Carotenoids/Case-Control

Studies/Diet/epidemiology/Female/Flavonoids/Food/Human/Lung Neoplasms/Middle Aged/Odds Ratio/prevention & control/Quercetin/Questionnaires/Risk/Risk Factors/Smoking/Spain/Support,Non-U.S.Gov't/Vitamin E/Women's Health
Reprint: Not in File
Abstract: Newly available data of a case-control study of lung cancer in women in Spain were analyzed to assess the relationship with the intake of specific carotenoids (alpha-carotene, beta-carotene, lutein, and lycopene) and flavonoids (quercetin, kaempferol, myricetin, and luteolin). The study included 103 cases and 206 hospital controls, matched by age and residence. Usual food intake was estimated through a food-frequency questionnaire. With adjustment for smoking habit and vitamin E, vitamin C, and total flavonoid intake, no association was found for the intake of alpha-carotene, beta-carotene, or lutein. The odds ratio (95% confidence interval) for women in the highest tertile of lycopene intake with respect to the lowest was 0.56 (0.26-1.24), with p for trend = 0.15. A nonsignificant association was observed for the highest vs. lowest tertile intake of kaempferol (odds ratio = 0.51, 95% confidence interval = 0.22-1.17), with p for trend = 0.10, after adjustment for smoking and vitamin E, vitamin C, and total carotenoid intake. No protective effect was observed for quercetin or luteolin or for total flavonoid intake
Notes: DA - 19990524
IS - 0163-5581
LA - eng
PT - Journal Article
PT - Multicenter Study
RN - 0 (Flavonoids)
RN - 36-88-4 (Carotenoids)
SB - IM

86. Gee,J.M., andI.T.Johnson. 2001. Polyphenolic compounds: interactions with the gut and implications for human health. Curr. Med Chem. 8:1245-1255.
Ref ID: 327
Keywords: Animals/Antineoplastic Agents,Phytogenic/Diet/Digestive System/drug effects/Flavonoids/Food/Fruit/Health/Human/Intestinal Absorption/Intestinal Mucosa/metabolism/pharmacokinetics/pharmacology/Quercetin/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Abstract: Polyphenolic compounds are abundant throughout the plant kingdom and are found in a wide variety of human foods. The flavonoids, which are the best defined group of polyphenols in the human diet, themselves comprise a large and complex group, all of which contain a three-ring structure with two aromatic centres and a central oxygenated heterocycle. Recent evidence suggests that significant quantities of quercetin and possibly myricetin and kaempferol are absorbed in the gut. A larger fraction probably remains in the lumen, and thus a substantial proportion of the gastrointestinal mucosa is exposed to biologically significant concentrations of these compounds. A substantial body of experimental work has established that flavonoids can suppress carcinogenesis in animal models and there is considerable interest in the biological effects of these compounds at the cellular level. Flavonoids interact with cellular signal pathways controlling the cell cycle, differentiation and apoptosis. Their potentially antineoplastic effects include antioxidant activity, induction of Phase II enzyme activity, inhibition of protein kinases and interactions with Type II estrogen binding sites. Naturally occurring polyphenolic compounds may play a role in the protective effects of fruits and vegetables against cancers in general, and they appear to have considerable potential for pharmaceutical uses as chemopreventive agents against neoplastic changes in the alimentary tract. Future research should therefore focus on the biological effects of flavonoids in the human body, using biomarkers to define their effects at each stage in the onset of neoplasia
Notes: DA - 20010919
IS - 0929-8673
LA - eng
PT - Journal Article
PT - Review

PT - Review, Tutorial
RN - 0 (Antineoplastic Agents, Phytogenic)
RN - 0 (Flavonoids)
SB - IM

87. Gerber,M., M.C.Boutron-Ruault, S.Hercberg, E.Riboli, A.Scalbert, and M.H.Siess. 2002. [Food and cancer: state of the art about the protective effect of fruits and vegetables]. Bull. Cancer 89:293-312.
Ref ID: 279
Keywords: administration & dosage/Allium/analysis/Animals/Antioxidants/Colorectal Neoplasms/Diet/English
Abstract/Female/Flavonoids/Fruit/Glucosinolates/Health/Human/Male/Micronutrients/Neoplasms/pharmacology/Phenols/Polymers/prevention & control/Risk/Sex Factors/Support,Non-U.S.Gov't/therapeutic use/Vegetables/Vitamins
Reprint: Not in File
Abstract: Epidemiological studies performed during the last 20 years support an inverse relationship between the individual intake of fruits and vegetables and the risk of cancer. In taking into account some recent conflicting data, a working group of the Nacre network, the French Network for Food and Cancer Research, has conduced a critical analysis of epidemiological and experimental studies, including the preliminary data from the Epic cohort, the European Prospective Investigation into Cancer and Nutrition, to clarify the role of fruits and vegetables to prevent cancer. To date, a high intake of fruits and vegetables (at least, 400 g per day) is appropriate to lower the risk of cancer. Fruits and vegetables provide numerous phytochemicals which, in part, may explain their beneficial effect. Thus, studies in animal models and in cell-culture systems have furnished a lot of information about the potential mechanism by which a diet high in fruits and vegetables may reduce the risk of cancer in humans. However, more investigation in the identification of the biologically active constituents, in the knowledge of their availability and the mechanism by which they contribute to lower the risk of cancer, will increase the scientific support of a public health policy
Notes: DA - 20020409
IS - 0007-4551
LA - fre
PT - Journal Article
PT - Review
PT - Review Literature
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Glucosinolates)
RN - 0 (Micronutrients)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (Vitamins)
RN - 0 (polyphenols)
SB - IM

88. Gil-Izquierdo,A., M.I.Gil, and F.Ferreres. 2002. Effect of processing techniques at industrial scale on orange juice antioxidant and beneficial health compounds. J Agric Food Chem. 50:5107-5114.
Ref ID: 94
Keywords: analysis/antioxidant/Antioxidants/Ascorbic Acid/Beverages/Caffeic Acids/Centrifugation/chemistry/Chromatography,High Pressure Liquid/Citrus/Comparative Study/Coumaric Acids/flavonoid/Flavonoids/Food Handling/Food-Processing Industry/Freezing/Glucosides/Health/methods/phenolics/Phenols/Precipitation/Spain/Support,Non-U.S.Gov't/Vitamin C
Reprint: Not in File
Abstract: Phenolic compounds, vitamin C (L-ascorbic acid and L-dehydroascorbic acid), and antioxidant capacity were evaluated in orange juices manufactured by different techniques. Five processes at industrial scale (squeezing, mild pasteurization, standard pasteurization,

concentration, and freezing) used in commercial orange juice manufacturing were studied. In addition, domestic squeezing (a hand processing technique) was compared with commercial squeezing (an industrial FMC single-strength extraction) to evaluate their influences on health components of orange juice. Whole orange juice was divided into soluble and cloud fractions after centrifugation. Total and individual phenolics were analyzed in both fractions by HPLC. Commercial squeezing extracted 22% more phenolics than hand squeezing. The freezing process caused a dramatic decrease in phenolics, whereas the concentration process caused a mild precipitation of these compounds to the juice cloud. In pulp, pasteurization led to degradation of several phenolic compounds, that is, caffeic acid derivatives, vicenin 2 (apigenin 6,8-di-C-glucoside), and narirutin (5,7,4'-trihydroxyflavanone-7-rutinoside) with losses of 34.5, 30.7, and 28%, respectively. Regarding vitamin C, orange juice produced by commercial squeezing contained 25% more of this compound than domestic squeezing. Mild and standard pasteurization slightly increased the total vitamin C content as the contribution from the orange solids parts, whereas concentration and freezing did not show significant changes. The content of L-ascorbic acid provided 77-96% of the total antioxidant capacity of orange juice. Mild pasteurization, standard pasteurization, concentration, and freezing did not affect the total antioxidant capacity of juice, but they did, however, in pulp, where it was reduced by 47%
Notes: DA - 20020821
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Caffeic Acids)
RN - 0 (Coumaric Acids)
RN - 0 (Flavonoids)
RN - 0 (Glucosides)
RN - 0 (Phenols)
RN - 0 (vicenin)
RN - 331-39-5 (caffeic acid)
RN - 491-70-3 (luteolin)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

89. Gil,M.I., F.Ferreres, and F.A.Tomas-Barberan. 1999. Effect of postharvest storage and processing on the antioxidant constituents (flavonoids and vitamin C) of fresh-cut spinach. J Agric Food Chem. 47:2213-2217.
Ref ID: 738
Keywords: analysis/antioxidant/Antioxidants/Ascorbic Acid/chemistry/Cookery/flavonoid/Flavonoids/Food Handling/Free Radical Scavengers/Glycosides/Spain/Spinach/Support,Non-U.S.Gov't/Vitamin C/Water
Reprint: Not in File
Abstract: The effect of modified atmosphere packaging (MAP) and cooking on the flavonoids and vitamin C content (ascorbic + dehydroascorbic acid; AA + DHAA) of fresh-cut spinach was evaluated. The total flavonoid content (approximately 1000 mg kg(-)(1) f.w.) remained quite constant during storage in both air and MAP atmospheres, while vitamin C (750 mg kg(-)(1)f.w.) was better preserved in MAP-stored spinach. AA was transformed to DHAA during storage, and its concentration was higher in MAP-stored tissues. The free-radical scavenging activity of the isolated flavonoids was tested, and only those flavonoids with either a dihydroxyl grouping or acylated with ferulic acid showed significant activity. A decrease in the total antioxidant activity was observed during storage, particularly important in MAP-stored spinach. The higher content of DHAA and lower content of both AA and antioxidant flavonoids in the MAP-stored samples could explain this antioxidant activity decrease. Boiling extracted 50% of total flavonoids and 60% vitamin C in the cooking water. However, flavonoid glucuronides were extracted more in the cooking water than the other glycosides. The vitamin C content of the cooked tissue was higher in those samples stored in MAP
Notes: DA - 20000816
IS - 0021-8561

LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Free Radical Scavengers)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

90. Gil,M.I., F.A.Tomas-Barberan, B.Hess-Pierce, D.M.Holcroft, and A.A.Kader. 2000. Antioxidant activity of pomegranate juice and its relationship with phenolic composition and processing. J Agric Food Chem. 48:4581-4589.
Ref ID: 737
Keywords:
analysis/Anthocyanins/antioxidant/Antioxidants/Beverages/chemistry/Chromatography,High Pressure Liquid/Ellagic Acid/Food Handling/Fruit/methods/Phenols/Spectrum Analysis,Mass/Support,Non-U.S.Gov't/Tannins/Tea/Time/Wine
Reprint: Not in File
Abstract: The antioxidant activity of pomegranate juices was evaluated by four different methods (ABTS, DPPH, DMPD, and FRAP) and compared to those of red wine and a green tea infusion. Commercial pomegranate juices showed an antioxidant activity (18-20 TEAC) three times higher than those of red wine and green tea (6-8 TEAC). The activity was higher in commercial juices extracted from whole pomegranates than in experimental juices obtained from the arils only (12-14 TEAC). HPLC-DAD and HPLC-MS analyses of the juices revealed that commercial juices contained the pomegranate tannin punicalagin (1500-1900 mg/L) while only traces of this compound were detected in the experimental juice obtained from arils in the laboratory. This shows that pomegranate industrial processing extracts some of the hydrolyzable tannins present in the fruit rind. This could account for the higher antioxidant activity of commercial juices compared to the experimental ones. In addition, anthocyanins, ellagic acid derivatives, and hydrolyzable tannins were detected and quantified in the pomegranate juices
Notes: DA - 20001212
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Phenols)
SB - IM

91. Giovannucci,E., E.B.Rimm, Y.Liu, M.J.Stampfer, and W.C.Willett. 2002. A Prospective Study of Tomato Products, Lycopene, and Prostate Cancer Risk. J Natl Cancer Inst 94:391-398.
Ref ID: 1830
Keywords: Confidence Intervals/Diet/Follow-Up Studies/Fruit/Health/lycopene/methods/Prospective Studies/Prostate/Questionnaires/Risk/Tomato
Reprint: In File
Abstract: Background: Some data, including our findings from the Health Professionals Follow-Up Study (HPFS) from 1986 through January 31, 1992, suggest that frequent intake of tomato products or lycopene, a carotenoid from tomatoes, is associated with reduced risk of prostate cancer. Overall, however, the data are inconclusive. We evaluated additional data from the HPFS to determine if the association would persist. Methods: We ascertained prostate cancer cases from 1986 through January 31, 1998, among 47 365 HPFS participants who completed dietary questionnaires in 1986, 1990, and 1994. We used pooled logistic regression to compute multivariate relative risks (RR) and 95% confidence intervals (CIs). All statistical tests were two-sided. Results: From 1986 through January 31, 1998, 2481 men in the study developed prostate cancer. Results for the period from 1992 through 1998 confirmed our previous findings--that frequent tomato or lycopene intake was associated with a reduced risk of prostate cancer. Similarly, for the entire period of 1986 through 1998, using the cumulative

average of the three dietary questionnaires, lycopene intake was associated with reduced risk of prostate cancer (RR for high versus low quintiles = 0.84; 95% CI = 0.73 to 0.96; Ptrend = .003); intake of tomato sauce, the primary source of bioavailable lycopene, was associated with an even greater reduction in prostate cancer risk (RR for 2+ servings/week versus <1 serving/month = 0.77; 95% CI = 0.66 to 0.90; Ptrend<.001), especially for extraprostatic cancers (RR = 0.65; 95% CI = 0.42 to 0.99). These associations persisted in analyses controlling for fruit and vegetable consumption and for olive oil use (a marker for Mediterranean diet) and were observed separately in men of Southern European or other Caucasian ancestry. Conclusion: Frequent consumption of tomato products is associated with a lower risk of prostate cancer. The magnitude of the association was moderate enough that it could be missed in a small study or one with substantial errors in measurement or based on a single dietary assessment

92. Govindji,A. 2000. Functional foods--can they provide a cure for ills? Community Nurse 6:S11-2, S15.
Ref ID: 273
Keywords: Diet/Dietary Supplements/Estrogens,Non-Steroidal/Health Food/Health Promotion/Human/Isoflavones/methods/Phytotherapy/Plant Preparations/Probiotics/standards/Sterols/therapeutic use
Reprint: Not in File
Notes: DA - 20020501
IS - 1351-1416
LA - eng
PT - Journal Article
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (Probiotics)
RN - 0 (Sterols)
RN - 0 (phytoestrogens)
SB - N

93. Grinder-Pedersen,L., S.E.Rasmussen, S.Bugel, L.V.Jorgensen, L.O.Dragsted, V.Gundersen, and B.Sandstrom. 2003. Effect of diets based on foods from conventional versus organic production on intake and excretion of flavonoids and markers of antioxidative defense in humans. J Agric Food Chem. 51:5671-5676.
Ref ID: 85
Keywords: administration & dosage/Adult/analysis/Antioxidants/Biological Markers/Cross-Over Studies/Diet/Double-Blind Method/Female/Flavonoids/Glutathione Peroxidase/Health Food/Human/Kaempferols/Male/metabolism/methods/Oxidation-Reduction/pharmacokinetics/Proteins/Quercetin/Support,Non-U.S.Gov't/urine
Reprint: Not in File
Abstract: Different food production methods may result in differences in the content of secondary metabolites such as polyphenolic compounds. The present study compared conventionally (CPD) and organically produced (OPD) diets in a human crossover intervention study (n = 16) with respect to the intake and excretion of five selected flavonoids and effect on markers of oxidative defense. The urinary excretion of quercetin and kaempferol was higher after 22 days of intake of the OPD when compared to the CPD ($P < 0.05$). The excretions of flavonoids in urine as a percentage of intake (0.6-4%) were similar after both interventions. Most markers of antioxidative defense did not differ between the diets, but intake of OPD resulted in an increased protein oxidation and a decreased total plasma antioxidant capacity compared to baseline ($P < 0.05$). Some varietal difference was seen in the study, and because selection of more resistant varieties is of central importance to organic farming, it cannot be excluded that the observed effects originate from these differences. The food production method affected the content of the major flavonoid, quercetin, in foods and also affected urinary flavonoids and markers of oxidation in humans
Notes: DA - 20030903
IS - 0021-8561

LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Antioxidants)
RN - 0 (Biological Markers)
RN - 0 (Flavonoids)
RN - 0 (Kaempferols)
RN - 0 (Proteins)
RN - 117-39-5 (Quercetin)
RN - 520-18-3 (kaempferol)
RN - EC 1.11.1.9 (Glutathione Peroxidase)
SB - IM

94. Gu,L., M.A.Kelm, J.F.Hammerstone, G.Beecher, J.Holden, D.Haytowitz, S.Gebhardt, and R.L.Prior. 2004. Concentrations of proanthocyanidins in common foods and estimations of normal consumption. J Nutr. 134:613-617.
Ref ID: 20
Keywords:
Adolescent/Adult/Aged/analysis/Beverages/Cereals/Child/Child,Preschool/Eating/Female/Flavonoids/Food Analysis/Fruit/Human/Infant/Male/Middle Aged/Nuts/Proanthocyanidins/Reference Values/Seasons/Spices/Support,Non-U.S.Gov't/United States/United States Department of Agriculture/Vegetables
Reprint: Not in File
Abstract: Proanthocyanidins (PAs) have been shown to have potential health benefits. However, no data exist concerning their dietary intake. Therefore, PAs in common and infant foods from the U.S. were analyzed. On the bases of our data and those from the USDA's Continuing Survey of Food Intakes by Individuals (CSFII) of 1994-1996, the mean daily intake of PAs in the U.S. population (>2 y old) was estimated to be 57.7 mg/person. Monomers, dimers, trimers, and those above trimers contribute 7.1, 11.2, 7.8, and 73.9% of total PAs, respectively. The major sources of PAs in the American diet are apples (32.0%), followed by chocolate (17.9%) and grapes (17.8%). The 2- to 5-y-old age group (68.2 mg/person) and men >60 y old (70.8 mg/person) consume more PAs daily than other groups because they consume more fruit. The daily intake of PAs for 4- to 6-mo-old and 6- to 10-mo-old infants was estimated to be 1.3 mg and 26.9 mg, respectively, based on the recommendations of the American Academy of Pediatrics. This study supports the concept that PAs account for a major fraction of the total flavonoids ingested in Western diets
Notes: DA - 20040227
IS - 0022-3166
LA - eng
PT - Journal Article
RN - 0 (Proanthocyanidins)
SB - IM

95. Guohua,C., E.Sofic, and R.L.Prior. 1996. Antioxidant capactiy of tea and common vegetables. J. Agric. Food Chem. 44:3426-3431.
Ref ID: 665
Keywords: antioxidant/Tea/Vegetables
Reprint: In File

96. Guyot,S., N.Marnet, P.Sanoner, and J.F.Drilleau. 2003. Variability of the polyphenolic composition of cider apple (Malus domestica) fruits and juices. J Agric Food Chem. 51:6240-6247.
Ref ID: 712
Keywords:
analysis/Beverages/Biotransformation/Catechin/Centrifugation/chemistry/flavonoid/Flavonoids/France/Fruit/Malus/Oxidation-Reduction/Phenols/Polymers/polyphenols/Seasons/Species Specificity/Support,Non-

U.S.Gov't
Reprint: Not in File
Abstract: Five French cider apple varieties were compared on the basis of their detailed polyphenol profile in the cortex and in the juices. Among the factors studied, variety was the most important variability factor in fruits, whereas polyphenol profiles showed an overall stability from one year to another, and a limited decrease of polyphenol concentration was observed during the starch regression period of fruit maturation. In juices, procyanidins remained the preponderant polyphenol class with concentrations up to 2.4 g/L even in centrifuged juices. Compared to the fruits, the average degree of polymerization of procyanidins was significantly reduced in the juice. Centrifugation of the crude juice had only minor effects on the polyphenol composition. For one variety, highly polymerized procyanidins with average degrees of polymerization of 25 were shown to be soluble in the centrifuged juice at a concentration of close to 1.2 g/L. Oxygenation of the juices during processing resulted in a significant decrease of all classes of native polyphenols. Catechins and procyanidins were particularly affected by oxidation, whereas caffeoylquinic acid was partly preserved. The transfer of polyphenols after pressing was maximal for dihydrochalcones and minimal for procyanidins with extraction yield values close to 80 and 30%, respectively
Notes: DA - 20031001
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 154-23-4 (Catechin)
RN - 4852-22-6 (procyanidin)
SB - IM

97. Hakkinen,S.H., andA.R.Torronen. 2000. Content of flavonols and selected phenolic acids in strawberries and vaccinium species: influence of cultivar, cultivation site and technique. Food Research International 33:517-524.
Ref ID: 657
Keywords: Blueberry/cultivars/cultivation/flavonoid/Flavonols/strawberries
Reprint: In File
Abstract: in file

98. Halbwirth,H., T.C.Fischer, S.Roemmelt, F.Spinelli, K.Schlangen, S.Peterek, E.Sabatini, C.Messina, J.B.Speakman, C.Andreotti, W.Rademacher, C.Bazzi, G.Costa, D.Treutter, G.Forkmann, and K.Stich. 2003. Induction of antimicrobial 3-deoxyflavonoids in pome fruit trees controls fire blight. Z. Naturforsch. [C.] 58:765-770.
Ref ID: 29
Keywords: Animals/Animals,Domestic/Anti-Bacterial Agents/biosynthesis/Flavonoids/Fruit/Human/isolation & purification/Microbial Sensitivity Tests/Phytotherapy/Plant Growth Regulators/Support,Non-U.S.Gov't/therapeutic use/Trees
Reprint: Not in File
Abstract: Fire blight, a devastating bacterial disease in pome fruits, causes severe economic losses worldwide. Hitherto, an effective control could only be achieved by using antibiotics, but this implies potential risks for human health, livestock and environment. A new approach allows transient inhibition of a step in the flavonoid pathway, thereby inducing the formation of a novel antimicrobial 3-deoxyflavonoid controlling fire blight in apple and pear leaves. This compound is closely related to natural phytoalexins in sorghum. The approach does not only provide a safe method to control fire blight: Resistance against different pathogens is also induced in other crop plants
Notes: DA - 20040109
IS - 0341-0382
LA - eng
PT - Journal Article

PT - Review
PT - Review, Tutorial
RN - 0 (Anti-Bacterial Agents)
RN - 0 (Flavonoids)
RN - 0 (Plant Growth Regulators)
SB - IM

99. Halvorsen,B.L., K.Holte, M.C.Myhrstad, I.Barikmo, E.Hvattum, S.F.Remberg, A.B.Wold, K.Haffner, H.Baugerod, L.F.Andersen, O.Moskaug, D.R.Jacobs, Jr., and R.Blomhoff. 2002. A systematic screening of total antioxidants in dietary plants. J Nutr. 132:461-471.
Ref ID: 753
Keywords:
analysis/antioxidant/Antioxidants/Asteraceae/Blueberry/Cereals/chemistry/Chronic Disease/Diet/Disease/Ericaceae/Fabaceae/Ferric Compounds/Ferrous Compounds/Fruit/Human/Juglandaceae/Norway/Nutrition/Nuts/Oxidation-Reduction/Plant
Roots/Plants/Plants,Edible/Research/Risk/Rosaceae/Seeds/strawberries/Support,Non-U.S.Gov't/Vegetables/Zingiberaceae
Reprint: Not in File
Abstract: A predominantly plant-based diet reduces the risk for development of several chronic diseases. It is often assumed that antioxidants contribute to this protection, but results from intervention trials with single antioxidants administered as supplements quite consistently do not support any benefit. Because dietary plants contain several hundred different antioxidants, it would be useful to know the total concentration of electron-donating antioxidants (i.e., reductants) in individual items. Such data might be useful in the identification of the most beneficial dietary plants. We have assessed systematically total antioxidants in a variety of dietary plants used worldwide, including various fruits, berries, vegetables, cereals, nuts and pulses. When possible, we analyzed three or more samples of dietary plants from three different geographic regions in the world. Total antioxidants was assessed by the reduction of Fe(3+) to Fe(2+) (i.e., the FRAP assay), which occurred rapidly with all reductants with half-reaction reduction potentials above that of Fe(3+)/Fe(2+). The values, therefore, expressed the corresponding concentration of electron-donating antioxidants. Our results demonstrated that there is more than a 1000-fold difference among total antioxidants in various dietary plants. Plants that contain most antioxidants included members of several families, such as Rosaceae (dog rose, sour cherry, blackberry, strawberry, raspberry), Empetraceae (crowberry), Ericaceae (blueberry), Grossulariaceae (black currant), Juglandaceae (walnut), Asteraceae (sunflower seed), Punicaceae (pomegranate) and Zingiberaceae (ginger). In a Norwegian diet, fruits, berries and cereals contributed 43.6%, 27.1% and 11.7%, respectively, of the total intake of plant antioxidants. Vegetables contributed only 8.9%. The systematic analysis presented here will facilitate research into the nutritional role of the combined effect of antioxidants in dietary plants
Notes: DA - 20020306
IS - 0022-3166
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Ferric Compounds)
RN - 0 (Ferrous Compounds)
SB - IM

100. Hanninen, K.Kaartinen, A.L.Rauma, M.Nenonen, R.Torronen, A.S.Hakkinen, H.Adlercreutz, and J.Laakso. 2000. Antioxidants in vegan diet and rheumatic disorders. Toxicology 155:45-53.
Ref ID: 391
Keywords:
analysis/Antioxidants/Arthritis,Rheumatoid/blood/Carotenoids/chemistry/Cholesterol/Chromatography,High Pressure Liquid/Diet/diet therapy/Diet,Vegetarian/Dietary Fiber/Eating/Female/Fibromyalgia/Finland/Flavonoids/Flavonols/Food/Fruit/Health/Hu

man/Lactobacillus/Lignans/metabolism/Middle
Aged/Nuts/physiology/physiopathology/Quercetin/Seeds/Severity of Illness
Index/Treatment Outcome/Vegetables/Vitamin E/Vitamins
Reprint: Not in File
Abstract: Plants are rich natural sources of antioxidants in addition to other nutrients. Interventions and cross sectional studies on subjects consuming uncooked vegan diet called living food (LF) have been carried out. We have clarified the efficacy of LF in rheumatoid diseases as an example of a health problem where inflammation is one of the main concerns. LF is an uncooked vegan diet and consists of berries, fruits, vegetables and roots, nuts, germinated seeds and sprouts, i.e. rich sources of carotenoids, vitamins C and E. The subjects eating LF showed highly increased levels of beta and alfa carotenes, lycopen and lutein in their sera. Also the increases of vitamin C and vitamin E (adjusted to cholesterol) were statistically significant. As the berry intake was 3-fold compared to controls the intake of polyphenolic compounds like quercetin, myricetin and kaempherol was much higher than in the omnivorous controls. The LF diet is rich in fibre, substrate of lignan production, and the urinary excretion of polyphenols like enterodiol and enterolactone as well as secoisolariciresinol were much increased in subjects eating LF. The shift of fibromyalgic subjects to LF resulted in a decrease of their joint stiffness and pain as well as an improvement of their self-experienced health. The rheumatoid arthritis patients eating the LF diet also reported similar positive responses and the objective measures supported this finding. The improvement of rheumatoid arthritis was significantly correlated with the day-to-day fluctuation of subjective symptoms. In conclusion the rheumatoid patients subjectively benefited from the vegan diet rich in antioxidants, lactobacilli and fibre, and this was also seen in objective measures
Notes: DA - 20010111
IS - 0300-483X
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Lignans)
RN - 36-88-4 (Carotenoids)
SB - IM

101. Health-Herbal.com. Oxygen Radical Absorbance Capacity (ORAC). 1999.
Ref Type: Audiovisual Material
Ref ID: 671
Keywords: ORAC/Oxygen

102. Hendrich,S. 2002. Bioavailability of isoflavones. J Chromatogr. B Analyt. Technol. Biomed. Life Sci 777:203-210.
Ref ID: 216
Keywords: Biological Availability/Biotransformation/Body Fluids/Health/Human/Iowa/Isoflavones/metabolism/pharmacokinetics/Soybeans/Support, Non-U.S.Gov't/Support,U.S.Gov't,Non-P.H.S./urine
Reprint: Not in File
Abstract: Isoflavones are disease protective components of soybeans. Isoflavone metabolism and bioavailability are key to understanding their biological effects. Isoflavone glucuronides, dominant biotransformation products in humans that are more hydrophilic than isoflavone aglycones, activate human natural killer cells in vitro but are less toxic to NK cells than the parent aglycones. Gut microbial isoflavone metabolites have also been identified, but remain to be well characterized. Gut transit time (GTT) seems to be a significant determinant of isoflavone bioavailability because women with more rapid GTT (<40 h) experienced 2-3-fold greater absorption of isoflavones than did women with longer GTT (>65 h). Isoflavone metabolism varies a great deal among individuals, thus limiting the quantitative value of urine

or plasma isoflavones as biomarkers of soy ingestion. Defining and lessening interindividual variation in isoflavone bioavailability, and characterizing health-related effects of key isoflavone metabolites are likely to be crucial to further understanding of the health benefits of isoflavones
Notes: DA - 20020924
IS - 1570-0232
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Isoflavones)
SB - IM

103. Herms,D. 1999. Physiological and Abiotic Determinants of Competitive Ability and Herbivore Resistance. Phyton (Austria) 39:53-64.
Ref ID: 676
Reprint: In File

104. Herms,D.A. 1992. The Dilemma of Plants: To Grow or Defend. The Quarterly Review of Biology 67:283-335.
Ref ID: 677
Keywords: Plants
Reprint: In File

105. Hertog,M.G., E.J.Feskens, P.C.Hollman, M.B.Katan, and D.Kromhout. 1993. Dietary antioxidant flavonoids and risk of coronary heart disese: the Zutphen Elderly Study. Lancet 342:1007-1011.
Ref ID: 685
Keywords: antioxidant/flavonoid/Flavonoids/Heart/Risk
Reprint: In File

106. Hertog,M.G., P.C.Hollman, M.B.Katan, and D.Kromhout. 1993. Intake of potentially anticarcinogenic flavonoids and their determinants in adults in The Netherlands. Nutr. Cancer 20:21-29.
Ref ID: 686
Keywords: Adult/flavonoid/Flavonoids/Netherlands
Reprint: In File

107. Hertog,M.G., andP.C.Hollman. 1996. Potential health effects of the dietary flavonol quercetin. Eur. J Clin Nutr. 50:63-71.
Ref ID: 595
Keywords: Absorption/administration & dosage/Animals/Cardiovascular Diseases/chemistry/Chronic Disease/Diet/epidemiology/Flavonoids/Food Analysis/Health/Human/Neoplasms/Netherlands/pharmacokinetics/Plants/prevention & control/Quercetin/Risk Factors
Reprint: Not in File
Notes: DA - 19960712
IS - 0954-3007
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 117-39-5 (Quercetin)
SB - IM

108. Ho,Y., J.Magnenat, M.Gargano, and J.Cao. 1998. The Nature of Antioxidant Defense Mechanisms: A Lesson from Transgenic Studies. Environ. Health Perspect. 106:1219-1228.

Ref ID: 668
Keywords: antioxidant
Reprint: In File

109. Hollman,P.C., andM.B.Katan. 1999. Dietary flavonoids: intake, health effects and bioavailability. Food Chem. Toxicol. 37:937-942.
Ref ID: 489
Keywords: Absorption/administration & dosage/Administration,Oral/Aged/analysis/Antioxidants/Beverages/Biological Availability/blood/Cerebrovascular Accident/chemistry/Cohort Studies/Comparative Study/Coronary Disease/Diet/Enzyme Induction/epidemiology/Female/Flavonoids/Flavonols/Food/Fruit/Glycosides/Health/Heart/Human/Lung Neoplasms/Male/Netherlands/Onions/pharmacokinetics/Prospective Studies/Quercetin/Risk/Rosales/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Abstract: Flavonoids are polyphenolic compounds that occur ubiquitously in foods of plant origin. Over 4000 different flavonoids have been described. They may have beneficial health effects because of their antioxidant properties and their inhibitory role in various stages of tumour development in animal studies. An estimation of the total flavonoid intake is difficult, because only limited data on food contents are available. It is estimated that humans ingest a few hundreds of milligram per day. The average intake of the subclasses of flavonols and flavones in The Netherlands was 23 mg/day. The intake of flavonols and flavones was inversely associated with subsequent coronary heart disease in most but not all prospective epidemiological studies. A protective effect of flavonols on cancer was found in only one prospective study. Flavonoids present in foods were considered non-absorbable because they are bound to sugars as beta-glycosides. However, we found that human absorption of the quercetin glycosides from onions (52%) is far better than that of the pure aglycone (24%). Flavonol glycosides might contribute to the antioxidant defences of blood. Dietary flavonols and flavones probably do not explain the cancer-protective effect of vegetables and fruits; a protective effect against cardiovascular disease is not conclusive
Notes: DA - 19991109
IS - 0278-6915
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
SB - IM

110. Horn-Ross,P.L., S.Barnes, M.Lee, L.Coward, J.E.Mandel, J.Koo, E.M.John, and M.Smith. 2000. Assessing phytoestrogen exposure in epidemiologic studies: development of a database (United States). Cancer Causes Control 11:289-298.
Ref ID: 446
Keywords: Adult/Aged/Agriculture/analysis/chemistry/Chromatography,High Pressure Liquid/Databases,Factual/Epidemiologic Studies/epidemiology/Estrogens,Non-Steroidal/Female/Food/Food Analysis/Food Preferences/Fruit/Garlic/Genistein/Health/Human/Isoflavones/Lignans/metabolism/methods/Middle Aged/Neoplasms/Plant Preparations/Plants,Edible/prevention & control/Questionnaires/Risk/Spectrum Analysis,Mass/statistics & numerical data/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./United States/United States Department of Agriculture
Reprint: Not in File
Abstract: BACKGROUND AND OBJECTIVE: Phytoestrogens (weak estrogens found in plants or derived from plant precursors by human metabolism) have been hypothesized to reduce the risk of a number of cancers. However, epidemiologic studies addressing this issue are hampered by the lack of a comprehensive phytoestrogen database for quantifying exposure. The purpose of this research was to develop such a database for use with food-frequency questionnaires in large epidemiologic studies. METHODS: The database is based on

consumption patterns derived from semistructured interviews with 118 African-American, Latina, and white women residing in California's San Francisco Bay Area. HPLC-mass spectrometry was used to determine the content of seven specific phytoestrogenic compounds (i.e. the isoflavones: genistein, daidzein, biochanin A, and formononetin; the coumestan: coumestrol; and the plant lignans: matairesinol and secoisolariciresinol) in each of 112 food items/groups. RESULTS: Traditional soy-based foods were found to contain high levels of genistein and daidzein, as expected, as well as substantial amounts of coumestrol. A wide variety of "hidden" sources of soy (that is, soy protein isolate, soy concentrate, or soy flour added to foods) was observed. Several other foods (such as various types of sprouts and dried fruits, garbanzo beans, asparagus, garlic, and licorice) were also found to be substantial contributors of one or more of the phytoestrogens analyzed. CONCLUSIONS: Databases, such as the one described here, are important in assessing the relationship between phytoestrogen exposure and cancer risk in epidemiologic studies. Agencies, such as the United States Department of Agriculture (USDA), that routinely provide data on food composition, on which epidemiologic investigations into dietary health effects are based, should consider instituting programs for the analysis of phytochemicals, including the phytoestrogens
Notes: DA - 20001017
IS - 0957-5243
LA - eng
PT - Journal Article
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

111. Howard,L., J.Clark, and C.Brownmiller. 2003. Antioxidant capactity and phenolic content in blueberries as affected by genotype and growing season. J Sci Food Agric 83:1238-1247.
Ref ID: 698
Keywords: antioxidant/Blueberry/Genotype
Reprint: In File

112. Howard,L.R., S.T.Talcott, C.H.Brenes, and B.Villalon. 2000. Changes in phytochemical and antioxidant activity of selected pepper cultivars (Capsicum species) as influenced by maturity. J Agric Food Chem. 48:1713-1720.
Ref ID: 721
Keywords: analysis/antioxidant/Antioxidants/Ascorbic Acid/Capsicum/Carotenoids/chemistry/Chromatography,High Pressure Liquid/cultivars/flavonoid/Flavonoids/Food/Fruit/growth & development/In Vitro/Phenols/Plants,Medicinal/Research/Vitamin C
Reprint: Not in File
Abstract: The effect of fruit maturation on changes in carotenoids, flavonoids, total soluble reducing equivalents, phenolic acids, ascorbic acid, and antioxidant activity (AOX) in different pepper types (Capsicum annuum, Capsicum frutescens, and Capsicum chinese) was determined. Generally, the concentration of these chemical constituents increased as the peppers reached maturity. Peppers contained high levels of L-ascorbic acid and carotenoids at maturity, contributing 124-338% of the RDA for vitamin C and 0.33-336 RE/100 g of provitamin A activity, respectively. Levels of phenolic acids, capxanthin, and zeaxanthin generally increased during maturation, whereas the level of lutein declined. Flavonoid concentrations varied greatly among the pepper types analyzed and were negatively correlated to AOX under the conditions of the beta-carotene-linoleic assay. Model systems were used to aid in understanding the relationship between flavonoids and AOX. Significant increases in AOX were observed in pepper juice models in response to increasing dilution factors and the presence of EDTA, indicating a pro-oxidant effect due to metal ions in the system. In vitro models demonstrated that increasing levels of flavonoids in combination with constant levels of caffeic and ascorbic acid gave a resultant AOX that was either additive of the two compounds or competitive in their ability to scavenge peroxyl radicals. The model systems

were in good agreement with the chemical composition of the pepper cultivars and reflected the interactions affecting AOX. More research is needed to understand the complex interactions that occur among various antioxidants present in pepper extracts
Notes: DA - 20000828
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 36-88-4 (Carotenoids)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

113. Howell,A.B. 2002. Cranberry proanthocyanidins and the maintenance of urinary tract health. Crit Rev Food Sci Nutr. 42:273-278.
Ref ID: 252
Keywords: Animals/Anthocyanins/Bacterial Adhesion/Beverages/Biological Availability/chemistry/drug effects/drug therapy/Escherichia coli/Escherichia coli Infections/Fruit/Health/Health Food/Human/microbiology/Molecular Structure/Molecular Weight/pathogenicity/pharmacology/physiology/Phytotherapy/Plant Extracts/prevention & control/Proanthocyanidins/Structure-Activity Relationship/therapeutic use/Urinary Tract Infections/urine/Vaccinium macrocarpon
Reprint: Not in File
Abstract: One of the major health benefits attributed to the ingestion of cranberry juice is the maintenance of urinary tract health. Traditionally, the juice was thought to cause acidification of the urine resulting in a bacteriostatic effect. However, recent research has demonstrated that a bacterial antiadhesion mechanism is responsible. Proanthocyanidins with unique molecular structures have been isolated from cranberry fruit that exhibit potent bacterial antiadhesion activity. Little is known about the bioavailability and structure-activity relationships of cranberry proanthocyanidins. Data on how certain structural features of the molecules can influence bioactivity and bioavailability are reviewed
Notes: DA - 20020612
IS - 1040-8398
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Anthocyanins)
RN - 0 (Plant Extracts)
RN - 0 (Proanthocyanidins)
RN - 18206-61-6 (proanthocyanidin)
SB - IM

114. Hsing,A.W., A.P.Chokkalingam, Y.T.Gao, M.P.Madigan, J.Deng, G.Gridley, and J.F.Fraumeni, Jr. 2002. Allium Vegetables and Risk of Prostate Cancer: A Population-Based Study
5. J Natl Cancer Inst 94:1648-1651.
Ref ID: 1834
Keywords: Allium/Case-Control Studies/China/comparison/Food/Garlic/Interviews/Male/Odds Ratio/Onions/Prostate/Risk/Vegetables
Reprint: In File
Abstract: Epidemiologic and laboratory studies suggest that allium vegetables and garlic constituents have antitumor effects. In a population-based, case-control study conducted in Shanghai, China, we investigated the association between intake of allium vegetables, including garlic, scallions, onions, chives, and leeks, and the risk of prostate cancer. We administered in-person interviews and collected information on 122 food items from 238 case subjects with

incident, histologically confirmed prostate cancer and from 471 male population control subjects. Men in the highest of three intake categories of total allium vegetables (>10.0 g/day) had a statistically significantly lower risk (odds ratio [OR] = 0.51, 95% confidence interval [CI] = 0.34 to 0.76; Ptrend<.001) of prostate cancer than those in the lowest category (<2.2 g/day). Similar comparisons between categories showed reductions in risk for men in the highest intake categories for garlic (OR = 0.47, 95% CI = 0.31 to 0.71; Ptrend<.001) and scallions (OR = 0.30, 95% CI = 0.18 to 0.51; Ptrend<.001). The reduced risk of prostate cancer associated with allium vegetables was independent of body size, intake of other foods, and total calorie intake and was more pronounced for men with localized than with advanced prostate cancer

115. Huang,D., J.A.Flanagan, R.L.Prior, O.Boxin, and M.Hampsch-Woodill. 2002. High-Throughput Assay of Oxygen Radical Absorbance Capacity (ORAC) Using a Multichannel Liquid Handling System Coupled with a Microplate Fluorescence Reader in 96-Well Format . J Agric Food Chem. 50:4437-4444.
Ref ID: 640
Keywords: antioxidant/Food/Food Industry/Industry/Oxygen/Assay/ORAC
Reprint: In File
Abstract: The oxygen radical absorbance capacity (ORAC) assay has been widely accepted as a standard tool to measure the antioxidant activity in the nutraceutical, pharmaceutical, and food industries. However, the ORAC assay has been criticized for a lack of accessibility due to the unavailability of the COBAS FARA II analyzer, an instrument discontinued by the manufacturer. In addition, the manual sample preparation is time-consuming and labor-intensive. The objective of this study was to develop a high-throughput instrument platform that can fully automate the ORAC assay procedure. The new instrument platform consists of a robotic eight-channel liquid handling system and a microplate fluorescence reader. By using the high-throughput platform, the efficiency of the assay is improved with at least a 10-fold increase in sample throughput over the current procedure. The mean of intra- and interday CVs was 15%, and the limit of detection and limit of quantitation were 5 and 6.25 M, respectively.

116. Hughes,C.L., andT.R.Dhiman. 2002. Dietary compounds in relation to dietary diversity and human health. J Med Food 5:51-68.
Ref ID: 188
Keywords: Animals/chemistry/Diet/Disease Models,Animal/drug effects/Endocrine System/Fatty Acids/Fatty Acids,Unsaturated/Health/Health Food/Human/Isoflavones/Linoleic Acids/metabolism/Neoplasms,Hormone-Dependent/pharmacology/physiology/prevention & control/toxicity
Reprint: Not in File
Abstract: The human diet contains numerous endocrine-active compounds that influence mammalian physiology. The effects of these dietary compounds may be mediated by interaction with well-characterized intracellular hormone receptors or by other effects on patterns of endogenous hormone production, metabolism, target tissue signaling, growth, or differentiation. Because humans evolved as omnivores, the spectrum of dietary compounds that can be tolerated at modest levels of intake without frank toxicity is broad. Modest intake of these diverse nonnutritive endocrine-active compounds offers potential human health benefits through modulation of metabolic and hormonal responses, especially in sedentary individuals consuming a highly refined diet
Notes: DA - 20021218
IS - 1096-620X
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Fatty Acids, Unsaturated)
RN - 0 (Isoflavones)
RN - 0 (Linoleic Acids)

RN - 26764-25-0 (octadecadienoic acid)
SB - IM

117. Humfrey,C.D. 1998. Phytoestrogens and human health effects: weighing up the current evidence. Nat. Toxins. 6:51-59.
Ref ID: 521
Keywords: Adult/adverse effects/Animals/blood/Brain/Cardiovascular Diseases/Chronic Disease/Diet/drug effects/Estrogens,Non-Steroidal/Female/Fertility/Food/Fruit/Health/Human/Infant/Intervention Studies/Isoflavones/Lignans/Male/Neoplasms/Osteoporosis/Phytotherapy/Plant Preparations/Plants/prevention & control/Prostate/Risk/Support,Non-U.S.Gov't/therapeutic use/Vegetables
Reprint: Not in File
Abstract: Phytoestrogens are naturally occurring plant compounds which have oestrogenic and/or anti-oestrogenic activity. They are present in many human foodstuffs including beans, sprouts, cabbage, spinach, soyabean, grains and hops. The main classes are the isoflavones, coumestans and lignans. This review assesses the evidence that these substances may have adverse and/or beneficial impacts on the risk of several hormone-dependent diseases in humans. Evidence from studies of various animal species has demonstrated that ingestion of high levels of phytoestrogens can produce adverse effects on reproductive endpoints including fertility. Studies in laboratory animals have also shown that exposure to high doses of phytoestrogens during development can adversely affect brain differentiation and reproductive development in rodents, but may also have possible beneficial effects. In humans, there is a lack of information concerning the possible effects of high doses of phytoestrogens in infants and this should be addressed as a matter of priority so that any risks (or benefits) can be established. In adults, no current data exist to suggest that consumption of phytoestrogens at the levels normally encountered in the diet is likely to be harmful. Epidemiological studies suggest that foodstuffs containing phytoestrogens may have a beneficial role in protecting against a number of chronic diseases and conditions. For cancer of the prostate, colon, rectum, stomach and lung, the evidence is most consistent for a protective effect resulting from a high intake of grains, legumes, fruits and vegetables; it is not possible to identify particular food types or components that may be responsible. Dietary intervention studies indicate that in women soya and linseed may have beneficial effects on the risk of breast cancer and may help to alleviate postmenopausal symptoms. For osteoporosis, tentative evidence suggests phytoestrogens may have similar effects in maintaining bone density to those of the related pharmaceutical compound ipriflavone. Soya also appears to have beneficial effects on blood lipids which may help to reduce the risk of cardiovascular disease and atherosclerosis. Generally, however, little evidence exists to link these effects directly to phytoestrogens; many other components of soya and linseed are biologically active in various experimental systems and may be responsible for the observed effects in humans. It is concluded that dietary phytoestrogens may have a role in the prevention of several types of chronic disease including certain cancers. However, at present the evidence is not sufficient to recommend particular dietary practices or changes. Encouraging findings from laboratory and clinical studies indicate the need for further research to clarify the biological activities of phytoestrogens in humans
Notes: DA - 19990311
IS - 1056-9014
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

118. Huxley,R.R., andH.A.W.Neil. 2003. The Relationship between Dietary Flavonol Intake and Coronary Heart Disease Mortality: a Meta-analysis of Prospective Cohort Studies. European Journal of Clinical Nutrition 57:904-908.
Ref ID: 679
Keywords: Cohort Studies/Disease/Heart/Meta-Analysis/mortality
Reprint: In File

119. Huxley,R.R., M.Lean, A.Crozier, J.H.John, and H.A.Neil. 2004. Effect of dietary advice to increase fruit and vegetable consumption on plasma flavonol concentrations: results from a randomised controlled intervention trial. J Epidemiol Community Health 58:288-289.
Ref ID: 15
Keywords: Adult/Biological Markers/blood/Coronary Disease/diet therapy/Female/Flavonols/Food Habits/Fruit/Health Promotion/Human/Male/Middle Aged/prevention & control/psychology/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Notes: DA - 20040317
IS - 0143-005X
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Biological Markers)
RN - 0 (Flavonols)
SB - IM

120. Ioku,K., Y.Aoyama, A.Tokuno, J.Terao, N.Nakatani, and Y.Takei. 2001. Various cooking methods and the flavonoid content in onion. J Nutr. Sci Vitaminol. (Tokyo) 47:78-83.
Ref ID: 362
Keywords: analysis/Antioxidants/Ascorbic Acid/chemistry/Chromatography,High Pressure Liquid/Cookery/Digestion/Flavonoids/Food Handling/Glycosides/Health/Heat/Hydrolysis/methods/Microwaves/Nutritive Value/Onions/Quercetin/Time Factors
Reprint: Not in File
Abstract: Onion is a major source of flavonoids and is cooked in various ways in the world. The major flavonoids in onion are two quercetin glycosides, quercetin 4'-O-beta-glucoside (Q4'G) and quercetin 3,4'-O-beta-diglucosides (Q3,4'G), which are recognized as bioactive substances that are good for our health. We have investigated the effect of cooking procedures on the content of antioxidants. We selected quercetin conjugates, total phenol compounds, and ascorbic acid to estimate the amount of flavonoid ingestion from onion. We examined the following cooking methods: boiling, frying with oil and butter, and microwave cooking. Various cooking methods do not consider the degradation of quercetin conjugates when cooking onion. Microwave cooking without water better retains flavonoids and ascorbic acid. Frying does not affect flavonoid intake. The boiling of onion leads to about 30% loss of quercetin glycosides, which transfers to the boiling water. At that time, the effect of additives on the quercetin conjugates is different according to the compounds. The hydrolysis of quercetin glycosides for daily cooking might occur with the addition of seasonings such as glutamic acid. Additional ferrous ions accelerated the loss of flavonoids
Notes: DA - 20010514
IS - 0301-4800
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 117-39-5 (Quercetin)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

121. Ishiwata,H., M.Nishijima, and Y.Fukasawa. 2003. Estimation of inorganic food additive (nitrite, nitrate and sulfur dioxide), antioxidant (BHA and BHT), processing agent (propylene glycol) and sweetener (sodium saccharin) concentrations in foods and their daily intake based on official inspection results in Japan in fiscal year 1998. Shokuhin Eiseigaku Zasshi 44:132-143.
Ref ID: 731
Keywords: analysis/antioxidant/Antioxidants/Butylated Hydroxyanisole/Butylated Hydroxytoluene/Food/Food Additives/Health/Human/Japan/Nitrates/Nitrites/Propylene Glycol/Saccharin/Sulfur/Sulfur Dioxide/Support,Non-U.S.Gov't/Sweetening Agents
Reprint: Not in File
Abstract: The mean concentration and daily intake of inorganic food additives (nitrite, nitrate, and sulfur dioxide), antioxidants (BHA and BHT), a processing agent (propylene glycol), and a sweetener (sodium saccharin) were estimated based on the results of an analysis of 34,489 food samples obtained in official inspections by 106 local governments in Japan in fiscal year 1998. The ratios of mean concentrations of these seven food additives to each allowable limit were 20.0%, 53.9%, 15.5%, 6.2%, 0.4%, 18.5%, and 5.7%, respectively. The daily intakes of these food additives estimated from their concentrations in foods and the daily consumption of foods were 0.205, 0.532, 4.31, 0.119, 0.109, 77.5, and 7.27 mg per person, respectively. These amounts were 6.8%, 0.3%, 12.3%, 0.5%, 0.7%, 6.2%, and 2.6% of the acceptable daily intake (ADI), respectively, when body weight was assumed to be 50 kg. No remarkable differences in the daily intakes of these seven food additives or the ratios to the ADI were observed compared with the results based on the official inspections in fiscal years 1994 and 1996
Notes: DA - 20030708
IS - 0015-6426
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Food Additives)
RN - 0 (Nitrates)
RN - 0 (Nitrites)
RN - 0 (Sweetening Agents)
RN - 128-37-0 (Butylated Hydroxytoluene)
RN - 25013-16-5 (Butylated Hydroxyanisole)
RN - 57-55-6 (Propylene Glycol)
RN - 7446-09-5 (Sulfur Dioxide)
RN - 81-07-2 (Saccharin)
SB - IM

122. Jaga,K., andH.Duvvi. 2001. Risk reduction for DDT toxicity and carcinogenesis through dietary modification. J R. Soc. Health 121:107-113.
Ref ID: 341
Keywords: administration & dosage/adverse effects/Anticarcinogenic Agents/Breast Neoplasms/Carcinogens/chemically induced/Curcumin/Ddt/Diet/Dietary Fats/Environmental Exposure/Estrogens,Non-Steroidal/Female/Food/Food Contamination/Food Habits/Fruit/Great Britain/Health/Health Behavior/Human/Insecticides,Organochlorine/Isoflavones/metabolism/Plant Preparations/prevention & control/Risk/toxicity/Vegetables
Reprint: Not in File
Abstract: Organochlorine pesticides, including dichlorodiphenyltrichloroethane (DDT), are an environmental hazard due to their persistent nature and potential health effects. DDT and 1,1,dichloro-2,2,bis(p-chlorophenyl)ethylene (DDE) are lipid-soluble pesticides which accumulate in fatty tissues and are, therefore, more present in fat-containing foods such as meat, fish, milk, cheese and oil than in fruit, vegetables and grain. Scientists have for some time been concerned about the human exposure to DDT and the potential risk of breast cancer due to its oestrogenic activity. The introduction of foods containing chemopreventive agents in the diet could inhibit the oestrogenic effects of DDT and the risk of developing cancer. Phytooestrogens are weak oestrogens found in certain plants such as soybean. They compete with DDT for oestrogen receptors and inhibit the oestrogenic effect of DDT on cultured

human breast (MCF) cells. Curcumin, a spice widely used in Indian dishes, has anti-carcinogenic and anti-inflammatory properties. It also inhibits the oestrogenic effects of DDT and is synergistic with phytooestrogens. Indole-3-carbinol, a compound naturally found in cruciferous vegetables, stimulates oestrogen metabolism towards 2-hydroxyoestrone which reduces the oestrogenic response in MCF cells and the risk of breast cancer. Since DDT is lipid soluble and accumulates in adipose tissue it could have a role in lipid metabolism. Would a low fat diet reduce DDT bioaccumulation? A reduction in calories can decrease oestrogen levels and possibly reduce the risk of breast cancer. A dietary modification with the introduction of soy products, curcumin, cruciferous vegetables and low fat could be beneficial in reducing the risk of developing cancer and possibly the effects of DDT
Notes: DA - 20010724
IS - 0264-0325
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Anticarcinogenic Agents)
RN - 0 (Carcinogens)
RN - 0 (Dietary Fats)
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Insecticides, Organochlorine)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
RN - 50-29-3 (DDT)
SB - IM

123. Jiratanan,T., andR.H.Liu. 2004. Antioxidant activity of processed table beets (Beta vulgaris var, conditiva) and green beans (Phaseolus vulgaris L.). J Agric Food Chem. 52:2659-2670.
Ref ID: 8
Keywords: analysis/antioxidant/Antioxidants/Ascorbic Acid/Beta vulgaris/chemistry/Color/Diet/flavonoid/Flavonoids/Folic Acid/Food/Food Handling/Fruit/Health/Heat/methods/Phaseolus/Vegetables/Vitamin C
Reprint: Not in File
Abstract: It has been shown that thermal processing of tomatoes and sweet corn results in increased antioxidant activities despite the loss of vitamin C. Until now, it is unclear whether this positive effect of thermal processing occurs with all crop produce. Therefore, analysis of a root vegetable (beets) and of a legume (green beans) was undertaken to address this question. Antioxidant activity of beets processed under typical commercial processing conditions remained constant despite an 8% loss of vitamin C, a 60% loss of color, and 30% loss of dietary folate. There was a slight but significant 5% increase in phenolic content of processed beets. In contrast, vitamin C and dietary folate content of green beans remained constant, whereas a 32% reduction in phenolic compounds occurred after typical commercial processing conditions. The antioxidant activity of green beans was reduced by 20%. These findings along with previous works suggest that the effects of thermal processing vary with the respective produce crop type. It also reinforces the concept that optimal health benefits may be achieved when a wide variety of plant foods (fruits, vegetables and whole grains) and preparation methods are incorporated into the diet
Notes: DA - 20040428
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 50-81-7 (Ascorbic Acid)
RN - 59-30-3 (Folic Acid)
SB - IM

124. Jones,C.M., P.Mes, and R.Myers. 2003. Characterization and Inheritance of the Anthocyanin fruit (AFT) Tomato. Journal of Heredity 94:449-456.
Ref ID: 647
Keywords: AFT/Anthocyanins/Fruit/Tomato
Reprint: In File

125. Kalt,W., C.F.Forney, A.Martin, and R.L.Prior. 1999. Antioxidant capacity, vitamin C, phenolics, and anthocyanins after fresh storage of small fruits. J Agric Food Chem. 47:4638-4644.
Ref ID: 481
Keywords: Agriculture/analysis/Anthocyanins/Antioxidants/Ascorbic Acid/chemistry/Food/Food Handling/Fragaria/Fruit/Health/metabolism/methods/Oxygen/Phenols/Temperature/Time Factors
Reprint: Not in File
Abstract: Fresh strawberries (Fragaria x ananassa Duch.), raspberries (Rubus idaeus Michx.), highbush blueberries (Vaccinium corymbosum L.), and lowbush blueberries (Vaccinium angustifolium Aiton) were stored at 0, 10, 20, and 30 degrees C for up to 8 days to determine the effects of storage temperature on whole fruit antioxidant capacity (as measured by the oxygen radical absorbing capacity assay, Cao et al., Clin. Chem. 1995, 41, 1738-1744) and total phenolic, anthocyanin, and ascorbate content. The four fruit varied markedly in their total antioxidant capacity, and antioxidant capacity was strongly correlated with the content of total phenolics (0.83) and anthocyanins (0.90). The antioxidant capacity of the two blueberry species was about 3-fold higher than either strawberries or raspberries. However, there was an increase in the antioxidant capacity of strawberries and raspberries during storage at temperatures >0 degrees C, which was accompanied by increases in anthocyanins in strawberries and increases in anthocyanins and total phenolics in raspberries. Ascorbate content differed more than 5-fold among the four fruit species; on average, strawberries and raspberries had almost 4-times more ascorbate than highbush and lowbush blueberries. There were no ascorbate losses in strawberries or highbush blueberries during 8 days of storage at the various temperatures, but there were losses in the other two fruit species. Ascorbate made only a small contribution (0.4-9.4%) to the total antioxidant capacity of the fruit. The increase observed in antioxidant capacity through postharvest phenolic synthesis and metabolism suggested that commercially feasible technologies may be developed to enhance the health functionality of small fruit crops
Notes: DA - 20000118
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Phenols)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

126. Kaprel'iants,L.V., S.V.Kiselev, and E.G.Iorgacheva. 2003. [Soybean isoflavones and prospects of their therapeutic application]. Vopr. Pitan. 72:36-41.
Ref ID: 28
Keywords: antioxidant/Antioxidants/Arteriosclerosis/chemistry/Disease/drug therapy/English Abstract/flavonoid/Flavonoids/Food/Human/Isoflavones/metabolism/methods/Neoplasms/Osteoporosis/prevention & control/Soybeans/therapeutic use
Reprint: Not in File
Abstract: Isoflavones are the biologically active compounds of soybeans which belong to the group of flavonoids. Having estrogen and antioxidant activities isoflavones are usable in prevention and treatment such common diseases as atherosclerosis, cancer, osteoporosis and others. The questions of isoflavone assay methods and the stability on different stages of soyfoods processing as biological activity of isoflavones and prospects of their therapeutical use are discussed in the review

Notes: DA - 20030912
IS - 0042-8833
LA - rus
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Isoflavones)
SB - IM

127. Karr,S.C., J.W.Lampe, A.M.Hutchins, and J.L.Slavin. 1997. Urinary isoflavonoid excretion in humans is dose dependent at low to moderate levels of soy-protein consumption. Am. J Clin Nutr. 66:46-51.
Ref ID: 567
Keywords: administration & dosage/Adult/Aged/Comparative Study/Cross-Over Studies/Diet/Double-Blind Method/Estrogens,Non-Steroidal/Female/Food/Genistein/Health/Human/Isoflavones/Male/metabolism/Nutrition/Plant Preparations/Proteins/Risk/Soybean Proteins/Soybeans/Support,Non-U.S.Gov't/urine
Reprint: Not in File
Abstract: Soybeans contain isoflavones, which have been associated with many health benefits, including decreased cancer risk. The purpose of our study was to measure urinary isoflavonoid excretion in response to daily consumption of soy that contained 0-36 mg isoflavones--a lower range than used in previous studies--and to compare urinary isoflavonoid excretion between equol excreters and nonexcreters. Fourteen men and women aged 20-40 y participated in the study. Half of the subjects were identified previously as equol excreters and the other half as equol nonexcreters. This randomized, double-blind, crossover study consisted of four 9-d diet treatment periods. During each treatment period participants consumed a low-photoestrogen controlled diet and a beverage containing 0, 5, 10, or 20 g soy protein. Urine collected on the last 3 d of each treatment period was analyzed for isoflavonoid (equol, O-desmethylangolensin, genistein, and daidzein) and lignan (enterodiol and enterolactone) contents by using isotope-dilution gas chromatography-mass spectrometry. There was a highly linear dose response of urinary isoflavonoid excretion to soy consumption, which did not differ significantly between equol excreters and nonexcreters. There were no significant differences in lignan excretion between the two diet treatments. Our results indicate that urinary isoflavonoid excretion is dose dependent in humans at low to moderate levels of soy consumption
Notes: DA - 19970731
IS - 0002-9165
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (Soybean Proteins)
RN - 0 (phytoestrogens)
SB - AIM
SB - IM

128. Kataria,A., B.M.Chauhan, and D.Punia. 1989. Antinutrients in amphidiploids (black gram x Mung bean): varietal differences and effect of domestic processing and cooking. Plant Foods Hum. Nutr. 39:257-266.
Ref ID: 13
Keywords: analysis/Fabaceae/flavonoid/Flavonoids/Food/Food Handling/Heat/In Vitro/methods/Nutrition/Phenols/Phytic Acid/Plants,Medicinal/Polymers/polyphenols/Saponins/Seeds

Reprint: Not in File
Abstract: Phytic acid, saponin and polyphenol contents in grains of various varieties of black gram (Vigna mungo) Mung bean (Vigna radiata L.) amphidiploids ranged from 697 to 750, 2746 to 2972 and 702 to 783 mg/100 g, respectively. Domestic processing and cooking methods including soaking, ordinary and pressure cooking of soaked and unsoaked seeds, and sprouting significantly lowered phytic acid, saponin and polyphenol contents of the amphidiploid seeds. Soaking for 18 h removed 31 to 37% of the phytic acid; the extent of removal was higher with long periods of soaking. Saponins and polyphenols were relatively less affected. Loss of the antinutrients was greater when soaked instead of unsoaked seeds were cooked. Pressure cooking had a greater effect than ordinary cooking. Antinutrient concentrations declined following sprouting; the longer the period of germination the greater was the reduction
Notes: DA - 19900220
IS - 0921-9668
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (Saponins)
RN - 0 (polyphenols)
RN - 83-86-3 (Phytic Acid)
SB - IM

129. Katz,A.E. 2002. Flavonoid and botanical approaches to prostate health. J Altern. Complement Med 8:813-821.
Ref ID: 159
Keywords: Androgen Antagonists/Antineoplastic Agents,Phytogenic/drug effects/drug therapy/Human/Isoflavones/Male/metabolism/methods/Patient Education/Phytotherapy/Plant Extracts/prevention & control/Prostate/Prostatic Hyperplasia/Pygeum/Support,Non-U.S.Gov't/therapeutic use/Trifolium
Reprint: Not in File
Abstract: Benign prostatic hyperplasia (BPH) is a common problem among aging men that produces significant morbidity and health care costs. Contention exists as to whether currently available surgical and pharmacologic options for BPH are appropriate for men in the watchful-waiting stage. Recently, the possible benefits of phytotherapies (plant-derived preparations) in treating BPH and prostate cancer are being considered. Several phytotherapies, including saw palmetto, Pygeum africanum, curbicin, and isoflavone-containing supplements (red clover [Trifoleum pratense] and soy), are widely used in patients with BPH. Evidence suggests that the consumption of isoflavones found in legumes is related to lower rates of BPH and prostate cancer among Asian men. When evaluating natural therapies, the physician should look for a product that relieves symptoms and is safe, contains a health-conferring ingredient with a defined mechanism of action, and is standardized for that ingredient. Phytotherapies, particularly isoflavone-containing supplements, are likely to have an important role in the management of patients in the watchful-waiting stage of BPH
Notes: DA - 20030304
IS - 1075-5535
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Androgen Antagonists)
RN - 0 (Antineoplastic Agents, Phytogenic)
RN - 0 (Isoflavones)
RN - 0 (Permixon)
RN - 0 (Plant Extracts)
SB - IM

130. Kennedy,J.A., M.A.Matthews, and A.L.Waterhouse. 2000. Changes in grape seed polyphenols during fruit ripening. Phytochemistry 55:77-85.
Ref ID: 722
Keywords:
embryology/flavonoid/Flavonoids/Fruit/Kinetics/metabolism/Phenols/Polymers/polyphenols/Rosales/Seeds/Support,Non-U.S.Gov't/Vitis/Water
Reprint: Not in File
Abstract: The quantity and characterization of extracted flavan-3-ol monomers and procyanidins was determined in seeds from Vitis vinifera cv. Cabernet Sauvignon berries, over the course of ripening and at different levels of vine water status. The per berry extractive yield of all polyphenols decreased with maturity, and followed second-order kinetics. The flavan-3-ol monomers decreased most rapidly, followed by the procyanidin extension units and finally, the terminal units. The relative proportion of procyanidin extension units did not vary with maturity. During fruit ripening, the mean degree of polymerization of extracted procyanidins is unchanged when analyzed intact by HPLC, but decreases by thiolytic degradation. The proportion of extracted procyanidins resistant to acid catalyzed thiolysis increased with maturity. Changes in vine water status affected polyphenol amounts, indicating that cultural practices can be used to influence composition. Oxidation of the seed polyphenols during fruit ripening, could explain these observations
Notes: DA - 20010205
IS - 0031-9422
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (polyphenols)
SB - IM

131. Kikuzaki,H., S.Kayano, N.Fukutsuka, A.Aoki, K.Kasamatsu, Y.Yamasaki, T.Mitani, and N.Mitani. 2004. Abscisic Acid Related Compounds and Lignans in Prunes (*Prunus domestica* L.) and Their Oxygen Radical Absorbance Capacity (ORAC) . J Agric Food Chem. 52:344-349.
Ref ID: 641
Keywords: antioxidant/Antioxidants/Ethanol/Glucosides/Lignans/Oxygen/Prunes (Prunus domestica L.)/abscisic acid related compounds/lignan glucoside/oxygen radical absorbance capacity (ORAC)/Prunus/ORAC
Reprint: In File
Abstract: Four new abscisic acid related compounds (**1**-**4**), together with (+)-abscisic acid (**5**), (+)--D-glucopyranosyl abscisate (**6**), (6*S*,9*R*)-roseoside (**7**), and two lignan glucosides ((+)-pinoresinol mono--D-glucopyranoside (**8**) and 3-(-D-glucopyranosyloxymethyl)-2- (4-hydroxy-3-methoxyphenyl)-5-(3-hydroxypropyl)-7-methoxy-(2*R*,3*S*)-dihydrobenzofuran (**9**)) were isolated from the antioxidative ethanol extract of prunes (*Prunus domestica* L.). The structures of **1-4** were elucidated on the basis of NMR and MS spectrometric data to be *rel*-5-(3*S*,8*S*-dihydroxy-1*R*,5*S*-dimethyl-7-oxa-6-oxobicyclo[3,2,1]oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid (**1**), *rel*-5-(3*S*,8*S*-dihydroxy-1*R*,5*S*-dimethyl-7-oxa-6-oxobicyclo[3,2,1]oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid 3'-*O*--D-glucopyranoside (**2**), *rel*-5-(1*R*,5*S*-dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxa-6-oxobicyclo[3,2,1]oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid (**3**), and *rel*-5-(1*R*,5*S*-dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxabicyclo[3,2,1]- oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid (**4**). The antioxidant activities of these isolated compounds were evaluated on the basis of oxygen radical absorbance capacity (ORAC). The ORAC values of abscisic acid related compounds (**1-7)** were very low. Two lignans (**8** and **9)** were more effective antioxidants whose ORAC values were 1.09 and 2.33 mol of Trolox equiv/mol, respectively.

132. Kimira,M., Y.Arai, K.Shimoi, and S.Watanabe. 1998. Japanese intake of flavonoids and isoflavonoids from foods. J Epidemiol 8:168-175.
Ref ID: 532
Keywords: administration & dosage/Adult/Aged/Agriculture/analysis/blood/Blood

Pressure/Cholesterol/Databases,Factual/Diet/Diet Surveys/epidemiology/Female/Flavonoids/Food/Fruit/Genistein/Health/Human/Isoflavones/Japan/Middle Aged/Quercetin/Rutin/statistics & numerical data/Vegetables/Vitamins
Reprint: Not in File
Abstract: The intake of flavonoids and isoflavonoids was estimated based upon a preliminary database of 40 food items, covering at least 80% of total food consumption. Fifty volunteer women in "I-City" recorded the weight of all dietary intake for 3 days in September 1996, and received a health check-up, as well as laboratory examination. The data was analyzed in relation to the various food factors. Average daily intake per capita of flavonoids was as follows: 4.9 mg kaempferol, 8.3 mg quercetin, 1.5 mg rutin, 0.6 mg myricetin, 0.3 mg luteolin, 0.01 mg myricitrin, 0.4 mg fisetin, and 0.3 mg eriodictyol. Total intake from vegetables and fruits was less than 10 mg 16.2 mg (range: 3.18-35.61 mg) and 23.27 mg (4.62-52.12 mg) of isoflavones, such as daidzein and genistein, respectively, were taken per day, and total isoflavone intake was 39.46 mg (7.80-87.73 mg). Chief component analysis on ingested vitamins, flavonoids and isoflavonoids was carried out. Factor 1 was mainly composed of flavonoids and antioxidant vitamins. Factor 1 was positively associated with age and the level of HDL cholesterol and negatively related to the level of triglycerides. Factor 2, which was mainly composed of isoflavonoids, was positively associated with creatinine and uric acid levels. So far, these factors did not show a significant association with bone density and other health indices, such as BMI and blood pressure
Notes: DA - 19981112
IS - 0917-5040
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
SB - IM

133. King,A., andG.Young. 1999. Characteristics and occurrence of phenolic phytochemicals. J Am. Diet. Assoc. 99:213-218.
Ref ID: 518
Keywords: administration & dosage/analysis/chemistry/Coumaric Acids/Flavonoids/Food/Health/Heart/Human/Hydroxybenzoic Acids/Molecular Weight/Phenols/Plants,Edible/Polymers/Tannins
Reprint: Not in File
Abstract: Phenolic phytochemicals are the largest category of phytochemicals and the most widely distributed in the plant kingdom. The 3 most important groups of dietary phenolics are flavonoids, phenolic acids, and polyphenols. Flavonoids are the largest group of plant phenols and the most studied. Phenolic acids form a diverse group that includes the widely distributed hydroxybenzoic and hydroxycinnamic acids. Phenolic polymers, commonly known as tannins, are compounds of high molecular weight that are divided into 2 classes: hydrolyzable and condensed tannins. Quantification of food phenolics is just beginning, and preliminary results indicate high variability, even within a given food. Phenolics are biologically active compounds that may possess some disease-preventive properties. Evidence for their ability to prevent cancer or heart disease is preliminary and conflicting. The health benefits of phytochemicals have been reported in the popular press, and the public will come to dietitians for answers to their questions about phytochemicals
Notes: DA - 19990211
IS - 0002-8223
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Coumaric Acids)
RN - 0 (Flavonoids)
RN - 0 (Hydroxybenzoic Acids)
RN - 0 (Tannins)

SB - AIM
SB - IM

134. Kinnes, S. Is organic food always better for you? The Guardian . 7-15-2003.
Ref Type: Newspaper
Ref ID: 689
Keywords: Food/organic

135. Knekt,P., R.Jarvinen, A.Reunanen, and J.Maatela. 1996. Flavonoid intake and coronary mortality in Finland: a cohort study. BMJ 312:478-481.
Ref ID: 680
Keywords: Cohort Studies/Finland/flavonoid/mortality
Reprint: In File

136. Knekt,P., R.Jarvinen, R.Seppanen, M.Hellovaara, L.Teppo, E.Pukkala, and A.Aromaa. 1997. Dietary flavonoids and the risk of lung cancer and other malignant neoplasms. Am J. Epidemiol 146:223-230.
Ref ID: 684
Keywords: flavonoid/Flavonoids/Lung/Neoplasms/Risk
Reprint: In File

137. Knekt,P., J.Kumpulainen, R.Jarvinen, H.Rissanen, M.Heliovaara, A.Reunanen, T.Hakulinen, and A.Aromaa. 2002. Flavonoid intake and risk of chronic diseases. Am. J Clin Nutr. 76:560-568.
Ref ID: 227
Keywords: administration & dosage/Adult/analogs & derivatives/Antioxidants/Arthritis,Rheumatoid/Asthma/Cataract/Cerebrovascular Disorders/Chronic Disease/Diabetes Mellitus,Type II/Diet/epidemiology/Female/Flavanones/Flavonoids/Health/Heart/Hesperidin/Human/Incidence/Kaempferols/Lung Neoplasms/Male/Middle Aged/mortality/Myocardial Ischemia/Neoplasms/Prostate/Prostatic Neoplasms/Quercetin/Questionnaires/Risk/Risk Factors
Reprint: Not in File
Abstract: BACKGROUND: Flavonoids are effective antioxidants and may protect against several chronic diseases. OBJECTIVE: The association between flavonoid intake and risk of several chronic diseases was studied. DESIGN: The total dietary intakes of 10 054 men and women during the year preceding the baseline examination were determined with a dietary history method. Flavonoid intakes were estimated, mainly on the basis of the flavonoid concentrations in Finnish foods. The incident cases of the diseases considered were identified from different national public health registers. RESULTS: Persons with higher quercetin intakes had lower mortality from ischemic heart disease. The relative risk (RR) between the highest and lowest quartiles was 0.79 (95% CI: 0.63, 0.99: P for trend = 0.02). The incidence of cerebrovascular disease was lower at higher kaempferol (0.70; 0.56, 0.86; P = 0.003), naringenin (0.79; 0.64, 0.98; P = 0.06), and hesperetin (0.80; 0.64, 0.99; P = 0.008) intakes. Men with higher quercetin intakes had a lower lung cancer incidence (0.42; 0.25, 0.72; P = 0.001), and men with higher myricetin intakes had a lower prostate cancer risk (0.43; 0.22, 0.86; P = 0.002). Asthma incidence was lower at higher quercetin (0.76; 0.56, 1.01; P = 0.005), naringenin (0.69; 0.50, 0.94; P = 0.06), and hesperetin (0.64; 0.46, 0.88; P = 0.03) intakes. A trend toward a reduction in risk of type 2 diabetes was associated with higher quercetin (0.81; 0.64, 1.02; P = 0.07) and myricetin (0.79; 0.62, 1.00; P = 0.07) intakes. CONCLUSION: The risk of some chronic diseases may be lower at higher dietary flavonoid intakes
Notes: DA - 20020828
IS - 0002-9165
LA - eng
PT - Journal Article
RN - 0 (Flavanones)
RN - 0 (Flavonoids)
RN - 0 (Kaempferols)

RN - 117-39-5 (Quercetin)
RN - 480-41-1 (naringenin)
RN - 520-18-3 (kaempferol)
RN - 520-26-3 (Hesperidin)
RN - 520-33-2 (hesperetin)
RN - 529-44-2 (myricetin)
SB - AIM
SB - IM

138. Kpke, U. Influence of Organic and Conventional Farming Systems on Nutritional Quality of Food. 2003. Eolss Publishers.
Ref Type: Report
Ref ID: 678
Keywords: conventional/farming systems/Food/organic/quality

139. Kris-Etherton,P.M., andC.L.Keen. 2002. Evidence that the antioxidant flavonoids in tea and cocoa are beneficial for cardiovascular health. Curr. Opin. Lipidol. 13:41-49.
Ref ID: 311
Keywords: Antioxidants/Biological Availability/Cacao/Cardiovascular Diseases/Case-Control Studies/chemistry/Cohort Studies/drug effects/epidemiology/Flavonoids/Health/Human/metabolism/pharmacokinetics/Platelet Activation/prevention & control/Risk/Tea/therapeutic use/Thrombosis
Reprint: Not in File
Abstract: Epidemiologic studies suggest an inverse association of tea consumption with cardiovascular disease. The antioxidant effects of flavonoids in tea (including preventing oxidative damage to LDL) are among the potential mechanisms that could underlie the protective effects. Other possible mechanisms include attenuating the inflammatory process in atherosclerosis, reducing thrombosis, promoting normal endothelial function, and blocking expression of cellular adhesion molecules. Cocoa and chocolate can also be rich sources of flavonoids. Flavanols and procyanidins isolated from cocoa exhibit strong antioxidant properties in-vitro. In acute feeding studies, flavanol-rich cocoa and chocolate increased plasma antioxidant capacity and reduced platelet reactivity. Based on limited data, approximately 150 mg of flavonoids is needed to trigger a rapid antioxidant effect and changes in prostacyclin. Some dose-response evidence demonstrates an antioxidant effect with approximately 500 mg flavonoids. Brewed tea typically contains approximately 172 mg total flavonoids per 235 ml (brewed for 2 min); hence, consumption of 1 and 3.5 cups of tea would be expected to elicit acute and chronic physiologic effects, respectively. Chocolate is more variable with some products containing essentially no flavonoids (0.09 mg procyanidin/g), whereas others are high in flavonoids (4 mg procyanidin/g). Thus, approximate estimates of flavonoid rich chocolate needed to exert acute and chronic effects are 38 and 125 g, respectively. Collectively, the antioxidant effects of flavonoid-rich foods may reduce cardiovascular disease risk
Notes: DA - 20020115
IS - 0957-9672
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
SB - IM

140. Kritz-Silverstein,D., D.Von Muhlen, E.Barrett-Connor, and M.A.Bressel. 2003. Isoflavones and cognitive function in older women: the Soy and Postmenopausal Health In Aging (SOPHIA) Study. Menopause. 10:196-202.
Ref ID: 116
Keywords: adverse effects/Age Factors/Aged/Cognition/Dietary Supplements/Double-Blind

Method/drug effects/Estrogens,Non-Steroidal/Female/Human/Isoflavones/Memory/Mental Recall/Middle Aged/pharmacology/Phytotherapy/Plant Extracts/Postmenopause/Psychiatric Status Rating Scales/Soybeans/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./therapeutic use/Verbal Learning/soy/Health/Aging
Reprint: Not in File
Abstract: OBJECTIVE: This study examines the effects of a dietary supplement of isoflavones on cognitive function in postmenopausal women. DESIGN: Participants for this 6-month, double-blind, randomized, placebo-controlled clinical trial were women who were in good health, were postmenopausal at least 2 years, and were not using estrogen replacement therapy. Between July 24, 2000, and October 31, 2000, 56 women aged 55 to 74 years were randomized; 2 in the placebo group and 1 in the active treatment group did not complete the 6-month evaluation, and none withdrew because of adverse effects. Women randomized to active treatment (n = 27) took two pills per day, each containing 55 mg of soy-extracted isoflavones (110 mg total isoflavones per day; Healthy Woman: Soy Menopause Supplement, Personal Products Company, McNeil-PPC Inc., Skillman, NJ, USA). Women assigned to placebo (n = 26) took two identical-appearing pills per day containing inert ingredients. Cognitive function tests administered at baseline and follow-up included the following: Trails A and B, category fluency, and logical memory and recall (a paragraph recall test assessing immediate and delayed verbal memory). RESULTS: At baseline, all women were cognitively intact; there were no significant differences by treatment assignment in age, education, depressed mood, or cognitive function (all P values > 0.10). Compliance was 98% and 97%, respectively, in the placebo and treatment groups; all women took at least 85% of their pills. The women in the treatment group did consistently better, both as compared with their own baseline scores and as compared with the placebo group responses at 6 months. Comparisons of percentage change in cognitive function between baseline and follow-up showed greater improvement in category fluency for women on active treatment as compared with the case of those on placebo (P = 0.02) and showed (nonsignificantly) greater improvement on the two other tests of verbal memory and Trails B. CONCLUSION: These results suggest that isoflavone supplementation has a favorable effect on cognitive function, particularly verbal memory, in postmenopausal women
Notes: DA - 20030606
IS - 1072-3714
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Extracts)
SB - IM

141. Krogholm,K.S., J.Haraldsdottir, P.Knuthsen, and S.E.Rasmussen. 2004. Urinary total flavonoid excretion but not 4-pyridoxic acid or potassium can be used as a biomarker for the intake of fruits and vegetables. J Nutr. 134:445-451.
Ref ID: 26
Keywords: Adult/Biological Markers/Cross-Over Studies/Diet/Energy Intake/Flavonoids/Fruit/Human/Male/Potassium/Pyridoxic Acid/Support,Non-U.S.Gov't/urine/Vegetables
Reprint: Not in File
Abstract: To gain better insight into the potential health effects of fruits and vegetables, reliable biomarkers of intake are needed. The main purpose of this study was to investigate the ability of flavonoid excretion in both 24-h and morning urine samples to reflect a low intake and moderate changes in fruit and vegetable consumption. Furthermore, the urinary excretions of 4-pyridoxic acid (4-PA) and potassium were investigated as other potential biomarkers of fruit and vegetable intake. The study was designed as a 5-d randomized, controlled crossover study. On d 1-3, the men (n = 12) consumed a self-restricted flavonoid-free diet. On d 4, they were

provided a strictly controlled diet containing no fruits or vegetables (basic diet). On d 5, they consumed the basic diet supplemented with 300 or 600 g of fruits and vegetables. The total excretion of flavonoids in 24-h urine samples increased linearly with increasing fruit and vegetable intakes (r(s) = 0.86, P < 1 x 10(-6)). The total excretion of flavonoids in morning urine also increased, but the association was weaker (r(s) = 0.59, P < 0.0001). Urinary 4-PA in 24-h and morning urine samples increased significantly only with the 600-g increase in fruit and vegetable intake, whereas the excretion of potassium in urine did not reflect the changes in fruit and vegetable intake. We conclude that the total excretion of flavonoids in 24-h urine may be used as a new biomarker for fruit and vegetable intake
Notes: DA - 20040128
IS - 0022-3166
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Biological Markers)
RN - 0 (Flavonoids)
RN - 7440-09-7 (Potassium)
RN - 82-82-6 (Pyridoxic Acid)
SB - IM

142. Kuhnau,J. 1976. The flavonoids. A class of semi-essential food components: their role in human nutrition. World Rev. Nutr. Diet. 24:117-191.
Ref ID: 1851
Keywords: analogs & derivatives/Anthocyanins/Anti-Bacterial Agents/Antineoplastic Agents/Antineoplastic Agents,Phytogenic/antioxidant/Antioxidants/Ascorbic Acid/Catechin/Cell Division/Chalcone/Chelating Agents/chemistry/drug effects/flavonoid/Flavonoids/Food/Food Analysis/Glycosides/Human/Intestines/metabolism/microbiology/Nutrition/Nutritional Requirements/pharmacology/Phlorhizin/physiology/Plants/Plants,Edible/Quercetin/Rutin
Reprint: Not in File
Notes: DA - 19761230
IS - 0084-2230
LA - eng
PT - Journal Article
PT - Review
RN - 0 (Anthocyanins)
RN - 0 (Anti-Bacterial Agents)
RN - 0 (Antineoplastic Agents, Phytogenic)
RN - 0 (Antioxidants)
RN - 0 (Chelating Agents)
RN - 0 (Flavonoids)
RN - 0 (Glycosides)
RN - 117-39-5 (Quercetin)
RN - 153-18-4 (Rutin)
RN - 154-23-4 (Catechin)
RN - 50-81-7 (Ascorbic Acid)
RN - 60-81-1 (Phlorhizin)
RN - 94-41-7 (Chalcone)
SB - IM

143. Kumar,V., D.J.Mills, J.D.Anderson, and A.K.Mattoo. 2004. An alternative agriculture system is defined by a distinct expression profile of select gene transcripts and proteins. Proc. Natl. Acad. Sci. U. S. A 101:10535-10540.
Ref ID: 1847
Keywords: Agriculture/black/conventional/Disease/diseases/Longevity/Plants/Proteins/Research/Tom

ato/United States/United States Department of Agriculture
Reprint: Not in File
Abstract: Conventional agriculture has relied heavily on chemical inputs that have negatively impacted the environment and increased production costs. Transition to agricultural sustainability is a major challenge and requires that alternative agricultural practices are scientifically analyzed to provide a sufficiently informative knowledge base in favor of alternative farming practices. We show a molecular basis for delayed leaf senescence and tolerance to diseases in tomato plants cultivated in a legume (hairy vetch) mulch-based alternative agricultural system. In the hairy vetch-cultivated plants, expression of specific and select classes of genes is up-regulated compared to those grown on black polyethylene mulch. These include N-responsive genes such as NiR, GS1, rbcL, rbcS, and G6PD; chaperone genes such as hsp70 and BiP; defense genes such as chitinase and osmotin; a cytokinin-responsive gene CKR; and gibberellic acid 20 oxidase. We present a model of how their protein products likely complement one another in a field scenario to effect efficient utilization and mobilization of C and N, promote defense against disease, and enhance longevity
Notes: DA - 20040721
IS - 0027-8424
LA - eng
PT - Journal Article
SB - IM

144. Kumar,V., D.J.Mills, J.D.Anderson, and A.K.Mattoo. 2004. An alternative agriculture system is defined by a distinct expression profile of select gene transcripts and proteins. Proc. Natl. Acad. Sci. U. S. A 101:10535-10540.
Ref ID: 1846
Keywords:
Agriculture/black/conventional/Disease/diseases/Longevity/Plants/Proteins/Research/Tomato/United States/United States Department of Agriculture
Reprint: Not in File
Abstract: Conventional agriculture has relied heavily on chemical inputs that have negatively impacted the environment and increased production costs. Transition to agricultural sustainability is a major challenge and requires that alternative agricultural practices are scientifically analyzed to provide a sufficiently informative knowledge base in favor of alternative farming practices. We show a molecular basis for delayed leaf senescence and tolerance to diseases in tomato plants cultivated in a legume (hairy vetch) mulch-based alternative agricultural system. In the hairy vetch-cultivated plants, expression of specific and select classes of genes is up-regulated compared to those grown on black polyethylene mulch. These include N-responsive genes such as NiR, GS1, rbcL, rbcS, and G6PD; chaperone genes such as hsp70 and BiP; defense genes such as chitinase and osmotin; a cytokinin-responsive gene CKR; and gibberellic acid 20 oxidase. We present a model of how their protein products likely complement one another in a field scenario to effect efficient utilization and mobilization of C and N, promote defense against disease, and enhance longevity
Notes: DA - 20040721
IS - 0027-8424
LA - eng
PT - Journal Article
SB - IM

145. Kurilich,A.C., E.H.Jeffery, J.A.Juvik, M.A.Wallig, and B.P.Klein. 2002. Antioxidant Capacity of Different Broccoli (*Brassica oleracea*) Genotypes Using the Oxygen Radical Absorbance Capacity (ORAC) Assay. J Agric Food Chem. 50:5053-5057.
Ref ID: 638
Keywords: antioxidant/Antioxidants/Ascorbic Acid/Brassica/Carotenoids/Genotype/Oxygen
Reprint: In File
Abstract: Antioxidant capacity of hydrophilic and lipophilic extracts from eight broccoli genotypes was compared using the oxygen radical absorbance capacity (ORAC) assay. Each

genotype was analyzed for carotenoid, tocopherol, ascorbic acid, and flavonoid content. Results indicate that the antioxidant capacity of hydrophilic extracts ranged from 65.8 to 121.6 mol trolox equivalents (TE)/g of tissue, and the capacity of lipophilic extracts ranged from 3.9 to 17.5 mol TE/g. Ascorbic acid and flavonoid content of the hydrophilic extracts did not explain the total variation in antioxidant capacity of those extracts, suggesting either the presence of other antioxidant components that have yet to be identified or that the known antioxidants are producing synergistic effects. The carotenoids did correlate with antioxidant capacity of the lipophilic extracts and accounted for the majority of the variability in that fraction. The variability in hydrophilic and lipophilic antioxidant capacity found among these genotypes suggests that potential efficacy from antioxidants will vary considerably from genotype to genotype.

146. Kuwahara,H., A.Kanazawa, D.Wakamatu, S.Morimura, K.Kida, T.Akaike, and H.Maeda. 2004. Antioxidative and antimutagenic activities of 4-vinyl-2,6-dimethoxyphenol (canolol) isolated from canola oil. J. Agric. Food Chem. 52:4380-4387.
Ref ID: 1855
Keywords: Acids/alpha-Tocopherol/antagonists & inhibitors/Anti-Bacterial Agents/Antimutagenic Agents/antioxidant/Antioxidants/Apoptosis/Bacteria/chemistry/Colonic Neoplasms/DNA Damage/drug effects/Fatty Acids/Fatty Acids,Monounsaturated/flavonoid/Flavonoids/Human/isolation & purification/Japan/microbiology/Mutagenicity Tests/Nitric Oxide/Oxidative Stress/Peroxynitrous Acid/pharmacology/Phenol/Phenols/Rutin/Salmonella typhimurium/Stress/Tumor Cells,Cultured/Vinyl Compounds
Reprint: Not in File
Abstract: A potent antioxidative compound in crude canola oil, canolol, was recently identified, and reported herein are studies of its scavenging capacity against the endogenous mutagen peroxynitrite (ONOO(-)). ONOO(-) is generated by the reaction between superoxide anion radical and nitric oxide, both of which are produced by inflammatory leukocytes. Among various antioxidative substances of natural or synthetic origin, canolol was one of the most potent antimutagenic compounds when Salmonella typhimurium TA102 was used in the modified Ames test. Its potency was higher than that of flavonoids (e.g., rutin) and alpha-tocopherol and was equivalent to that of ebselen. Canolol suppressed ONOO(-)-induced bactericidal action. It also reduced intracellular oxidative stress and apoptosis in human cancer SW480 cells when used at a concentration below 20 microM under H(2)O(2)-induced oxidative stress. In addition, canolol suppressed plasmid DNA (pUC19) strand breakage induced by ONOO(-), as revealed by agarose gel electrophoresis
Notes: DA - 20040707
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (4-vinyl-2,6-dimethoxyphenol)
RN - 0 (Anti-Bacterial Agents)
RN - 0 (Antimutagenic Agents)
RN - 0 (Antioxidants)
RN - 0 (Fatty Acids, Monounsaturated)
RN - 0 (Phenols)
RN - 0 (Vinyl Compounds)
RN - 120962-03-0 (canola oil)
RN - 14691-52-2 (Peroxynitrous Acid)
SB - IM

147. Le Gall,G., M.S.DuPont, F.A.Mellon, A.L.Davis, G.J.Collins, M.E.Verhoeyen, and I.J.Colquhoun. 2003. Characterization and content of flavonoid glycosides in genetically modified tomato (Lycopersicon esculentum) fruits. J Agric Food Chem. 51:2438-2446.
Ref ID: 723
Keywords: analysis/Chalcone/chemistry/Chromatography,High Pressure

Liquid/flavonoid/Flavonoids/Food/Fruit/Gene Expression Regulation,Plant/genetics/Glycosides/growth & development/Health/Kaempferols/Lycopersicon esculentum/metabolism/methods/Plants/Plants,Genetically Modified/Research/Rutin/Support,Non-U.S.Gov't/Time/Tomato/Transcription Factors/Zea mays
Reprint: Not in File
Abstract: There is a growing interest in producing food plants with increased amounts of flavonoids because of their potential health benefits. Tomatoes contain small amounts of flavonoids, most of which are located in the peel of the fruit. It has been shown that flavonoid accumulation in tomato flesh, and hence an overall increase in flavonoid levels in tomato fruit, can be achieved by means of simultaneous overexpression of the maize transcription factors LC and C1. Fruit from progeny of two modified lines (2027 and 2059) was selected for a detailed analysis and individual identification of flavonoids, at different stages of maturity. Nine major flavonoids were detected in the flesh of transgenic ripe tomatoes. LC/NMR, LC/MS, and LC/MS/MS enabled us to identify these as kaempferol-3,7-di-O-glucoside (1), kaempferol-3-O-rutinoside-7-O-glucoside (2), two dihydrokaempferol-O-hexosides (3 and 4), rutin (5), kaempferol-3-O-rutinoside (6), kaempferol-3-O-glucoside (7), naringenin-7-O-glucoside (8) and naringenin chalcone (9), which were quantified by HPLC/DAD. All but 5, 6, and 9 were detected in tomato for the first time. The total flavonoid glycoside content of ripe transgenic tomatoes of line 2059 was about 10-fold higher than that of the controls, and kaempferol glycosides accounted for 60% of this. Kaempferol glycosides comprised around 5% of the flavonoid glycoside content of ripe control tomatoes (the rest was rutin and naringenin chalcone). The rutin concentration in both transgenic and control fruits was similar
Notes: DA - 20030416
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Glycosides)
RN - 0 (Kaempferols)
RN - 0 (Transcription Factors)
RN - 520-18-3 (kaempferol)
SB - IM

148. Le Marchand,L., Murphy S.P., J.H.Hankin, J.L.Wilkins, and L.N.Kolonel. 2000. Intake of flavonoids and lung cancer. J Natl Cancer Inst 92:154-160.
Ref ID: 681
Keywords: flavonoid/Flavonoids/Lung
Reprint: In File

149. Lee,J.H., andS.T.Talcott. 2004. Fruit maturity and juice extraction influences ellagic acid derivatives and other antioxidant polyphenolics in muscadine grapes. J Agric Food Chem. 52:361-366.
Ref ID: 724
Keywords: analysis/Anthocyanins/antioxidant/Antioxidants/Beverages/chemistry/cultivars/Ellagic Acid/flavonoid/Flavonoids/Food/Fruit/Glycosides/growth & development/Human/Nutrition/phenolics/Phenols/polyphenols/Support,Non-U.S.Gov't/Vitis
Reprint: Not in File
Abstract: Polyphenolic compounds including ellagic acid, ellagic acid derivatives, and anthocyanins were characterized and quantified by novel chromatographic conditions in eight muscadine grape (Vitis rotundifolia) cultivars and evaluated for antioxidant capacity as influenced by two ripening stages and their location within the fruit (skin, pulp, and juice). All polyphenolics generally increased as fruit ripened and the highest concentrations were located in the skins. Free ellagic acid, ellagic acid glycosides, and total ellagic acid ranged from 8 to 162, 7 to 115, and 587 to 1900 mg/kg, respectively, in the skin of ripe grapes. Hot-pressed juices

contained considerably lower polyphenolic concentrations than were present in whole grapes. Five anthocyanidins were present in each cultivar in variable concentrations (delphinidin > petunidin > malvidin + peonidin > cyanidin). Antioxidant capacity was appreciably influenced by cultivar, maturity, and location in the fruit with good correlations to soluble phenolics found in both methanolic and ethyl acetate extracts (r = 0.83 and 0.92, respectively)
Notes: DA - 20040121
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (polyphenols)
RN - 476-66-4 (Ellagic Acid)
SB - IM

150. Lee,K.W., Y.J.Kim, H.J.Lee, and C.Y.Lee. 2003. Cocoa has more phenolic phytochemicals and a higher antioxidant capacity than teas and red wine. J Agric Food Chem. 51:7292-7295.
Ref ID: 48
Keywords: analysis/Antioxidants/Beverages/Cacao/Catechin/chemistry/Comparative Study/Flavonoids/Free Radical Scavengers/Gallic Acid/Phenols/Picrates/Sulfonic Acids/Support,Non-U.S.Gov't/Tea/Wine
Reprint: Not in File
Abstract: Black tea, green tea, red wine, and cocoa are high in phenolic phytochemicals, among which theaflavin, epigallocatechin gallate, resveratrol, and procyanidin, respectively, have been extensively investigated due to their possible role as chemopreventive agents based on their antioxidant capacities. The present study compared the phenolic and flavonoid contents and total antioxidant capacities of cocoa, black tea, green tea, and red wine. Cocoa contained much higher levels of total phenolics (611 mg of gallic acid equivalents, GAE) and flavonoids (564 mg of epicatechin equivalents, ECE) per serving than black tea (124 mg of GAE and 34 mg of ECE, respectively), green tea (165 mg of GAE and 47 mg of ECE), and red wine (340 mg of GAE and 163 mg of ECE). Total antioxidant activities were measured using the 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assays and are expressed as vitamin C equivalent antioxidant capacities (VCEACs). Cocoa exhibited the highest antioxidant activity among the samples in ABTS and DPPH assays, with VCEACs of 1128 and 836 mg/serving, respectively. The relative total antioxidant capacities of the samples in both assays were as follows in decreasing order: cocoa > red wine > green tea > black tea. The total antioxidant capacities from ABTS and DPPH assays were highly correlated with phenolic content (r2 = 0.981 and 0.967, respectively) and flavonoid content (r2 = 0.949 and 0.915). These results suggest that cocoa is more beneficial to health than teas and red wine in terms of its higher antioxidant capacity
Notes: DA - 20031203
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Free Radical Scavengers)
RN - 0 (Phenols)
RN - 0 (Picrates)
RN - 0 (Sulfonic Acids)
RN - 149-91-7 (Gallic Acid)
RN - 154-23-4 (Catechin)
RN - 1898-66-4 (2,2-diphenyl-1-picrylhydrazyl)
RN - 28752-68-3 (2,2'-azino-di-(3-ethylbenzothiazoline)-6-sulfonic acid)
SB - IM

151. Lesgards,J., P.Durand, M.Lassare, P.Stocker, G.Lesgards, A.Lanteaume, M.Prost, and M.Lehucher-Michel. 2002. Assessment of Lifestyle Effects on the Overall Antioxidant Capacity of Healthy Subjects. Environmental Health Perspectives 110:479-487.
Ref ID: 666
Keywords: antioxidant/ORAC
Reprint: In File

152. Lester,G.E., andF.Eischen. 1996. Beta-carotene content of postharvest orange-fleshed muskmelon fruit: effect of cultivar, growing location and fruit size. Plant Foods Hum. Nutr. 49:191-197.
Ref ID: 197
Keywords: Agriculture/analysis/beta Carotene/Comparative Study/Crops,Agricultural/cultivars/Fruit/growth & development/Research/Soil
Reprint: Not in File
Abstract: The influence of two growing locations (soil types), six fruit sizes, and two years on the postharvest Beta-carotene content of muskmelon (Cucumis melo L. var. reticulatus Naud.) fruit was studied with two different cultivars. Fully abscised commercial size fruit: 9, 12, 15, 18, 23, and 30 (fruit/0.04 M3 shipping box) had highly variable Beta-carotene contents (5.3 to 33.8 micrograms/g fresh weight) that varied by size class, soil type and cultivar. Beta-carotene content increased with fruit size up to a maximum, though fruit size continued to increase. Find sandy loam soil produced fruit with less Beta-carotene content than silty clay loam soil. The cultivar Primo contained higher Beta-carotene content levels than cultivar Cruiser. Mesocarp percent moisture content for both 'Cruiser' and 'Primo' at both locations by fruit size was not significantly correlated (r = 0.40) with Beta-carotene content. Indicating fruit cell dilution may not contribute to the differences in Beta-carotene content in different fruit size classes. Beta-carotene content of size class '18' fruit from six cultivars grown on the silty clay loam soil for two consecutive years, showed a year, and year by cultivar effect for some cultivars. Whereas, some cultivars did not differ in Beta-carotene content between the two years. This indicates a potential for controlling Beta-carotene content of muskmelon fruit at a constant, high level by careful selection of production cultivar
Notes: DA - 19970107
IS - 0921-9668
LA - eng
PT - Journal Article
RN - 7235-40-7 (beta Carotene)
SB - IM

153. Levite, D, Adrian, M., and Tamm, L. Preliminary results of resveratrol in wine of organic and conventional vineyards. 256-257. 2000.
Ref Type: Conference Proceeding
Ref ID: 424
Keywords: conventional/organic/resveratrol/Wine

154. Liu,M., X.Q.Li, C.Weber, C.Y.Lee, J.Brown, and R.H.Liu. 2002. Antioxidant and antiproliferative activities of raspberries. J Agric Food Chem. 50:2926-2930.
Ref ID: 272
Keywords: analysis/Anthocyanins/Antioxidants/Cell Division/chemistry/drug effects/Flavonoids/Fruit/Health/Human/Liver Neoplasms/pathology/pharmacology/Phenols/Pigmentation/Plant Extracts/Species Specificity/Tumor Cells,Cultured
Reprint: Not in File
Abstract: Raspberries are rich in phenolic phytochemicals. To study the health benefits of raspberries, four fresh raspberry varieties (Heritage, Kiwigold, Goldie, and Anne) were evaluated for total antioxidant and antiproliferative activities. The total amount of phenolics and flavonoids for each of the four raspberry varieties was determined. The Heritage raspberry variety had the highest total phenolic content (512.7 +/- 4.7 mg/100 g of raspberry) of the varieties measured followed by Kiwigold (451.1 +/- 4.5 mg/100 g of raspberry), Goldie (427.5 +/- 7.5 mg/100 g of raspberry), and Anne (359.2 +/- 3.4 mg/100 g of raspberry). Similarly,

the Heritage raspberry variety contained the highest total flavonoids (103.4 +/- 2.0 mg/100 g of raspberry) of the varieties tested, followed by Kiwigold (87.3 +/- 1.8 mg/100 g of raspberry), Goldie (84.2 +/- 1.8 mg/100 g of raspberry), and Anne (63.5 +/- 0.7 mg/100 g of raspberry). The color of the raspberry juice correlated well to the total phenolic, flavonoid, and anthocyanin contents of the raspberry. Heritage had the highest a/b ratio and the darkest colored juice, and the Anne variety showed the lowest phytochemical content and the palest color. Heritage raspberry variety had the highest total antioxidant activity, followed by Kiwigold and Goldie, and the Anne raspberry variety had the lowest antioxidant activity of the varieties tested. The proliferation of HepG(2) human liver cancer cells was significantly inhibited in a dose-dependent manner after exposure to the raspberry extracts. The extract equivalent to 50 mg of Goldie, Heritage, and Kiwigold fruit inhibited the proliferation of those cells by 89.4 +/- 0.1, 88 +/- 0.2, and 87.6 +/- 1.0%, respectively. Anne had the lowest antiproliferative activity of the varieties measured but still exhibited a significant inhibition of 70.3+/- 1.2% with an extract equivalent to 50 mg of fruit. The antioxidant activity of the raspberry was directly related to the total amount of phenolics and flavonoids found in the raspberry ($p < 0.01$). No relationship was found between antiproliferative activity and the total amount of phenolics/flavonoids found in the same raspberry ($p > 0.05$)
Notes: DA - 20020501
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Plant Extracts)
SB - IM

155. Lombardi-Boccia,G., M.Lucarini, S.Lanzi, A.Aguzzi, and M.Cappelloni. 2004. Nutrients and antioxidant molecules in yellow plums (Prunus domestica L.) from conventional and organic productions: a comparative study. J Agric Food Chem. 52:90-94.
Ref ID: 10
Keywords: Agriculture/analysis/antioxidant/Antioxidants/Ascorbic Acid/beta Carotene/chemistry/Comparative Study/conventional/cultivation/flavonoid/Flavonoids/Flavonols/Fruit/gamma-Tocopherol/Health Food/Hydroxybenzoic Acids/methods/Minerals/organic/phenolics/Phenols/polyphenols/Prunus/Quercetin/Soil/Trifolium/Vitamin E/Vitamins
Reprint: Not in File
Abstract: Yellow plums (Prunus domestica L) conventionally and organically grown in the same farm were selected to study the influence of different agronomic practices on antioxidant vitamins (ascorbic acid, vitamin E, beta-carotene) and phenolics (total polyphenols, phenolic acids, flavonols) concentration. Conventional plums were grown on tilled soil. Three organic cultivations were performed: tilled soil, soil covered with trifolium, and soil covered with natural meadow. Differences in macronutrients were marginal, whereas antioxidant vitamins and phenolic compounds concentration markedly differed among cultivations. Ascorbic acid, alpha-, gamma-tocopherols, and beta-carotene were higher in organic plums grown on soil covered with natural meadow. The highest phenolic acids content was detected in plums grown on soil covered with trifolium. Total polyphenols content was higher in conventional plums. Quercetin was higher in conventional plums, but myrecitin and kaempferol were higher in organic plums. Under the same cultivar and climate conditions, the type of soil management turned out of primary importance in influencing the concentration of health-promoting compounds
Notes: DA - 20040107
IS - 0021-8561
LA - eng
PT - Journal Article

RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Hydroxybenzoic Acids)
RN - 0 (Minerals)
RN - 0 (Phenols)
RN - 0 (Vitamins)
RN - 0 (polyphenols)
RN - 29656-58-4 (phenolic acid)
SB - IM

156. Lombardi-Boccia,G., M.Lucarini, S.Lanzi, A.Aguzzi, and M.Cappelloni. 2004. Nutrients and Antioxidant Molecules in Yellow Plums (*Prunus domestica* L.) from Conventional and Organic Productions: A Comparative Study. J Agric Food Chem. 52:90-94.
Ref ID: 645
Keywords: antioxidant/Ascorbic Acid/Comparative Study/conventional/Flavonols/organic/Prunus/Quercetin/Soil/Trifolium/Vitamin E/Vitamins
Reprint: In File
Abstract: Yellow plums (*Prunus domestica* L) conventionally and organically grown in the same farm were selected to study the influence of different agronomic practices on antioxidant vitamins (ascorbic acid, vitamin E, -carotene) and phenolics (total polyphenols, phenolic acids, flavonols) concentration. Conventional plums were grown on tilled soil. Three organic cultivations were performed: tilled soil, soil covered with trifolium, and soil covered with natural meadow. Differences in macronutrients were marginal, whereas antioxidant vitamins and phenolic compounds concentration markedly differed among cultivations. Ascorbic acid, -, -tocopherols, and -carotene were higher in organic plums grown on soil covered with natural meadow. The highest phenolic acids content was detected in plums grown on soil covered with trifolium. Total polyphenols content was higher in conventional plums. Quercetin was higher in conventional plums, but myrecitin and kaempferol were higher in organic plums. Under the same cultivar and climate conditions, the type of soil management turned out of primary importance in influencing the concentration of health-promoting compounds.

157. Lotito,S.B., andB.Frei. 2004. The increase in human plasma antioxidant capacity after apple consumption is due to the metabolic effect of fructose on urate, not apple-derived antioxidant flavonoids. Free Radic. Biol. Med. 37:251-258.
Ref ID: 1841
Keywords: antioxidant/Cardiovascular Diseases/Disease/diseases/flavonoid/Flavonoids/Food/foods/Fruit/Human/Plasma/Risk/Water
Reprint: Not in File
Abstract: Regular fruit consumption lowers the risk of cardiovascular diseases and certain cancers, which has been attributed in part to fruit-derived antioxidant flavonoids. However, flavonoids are poorly absorbed by humans, and the increase in plasma antioxidant capacity observed after consumption of flavonoid-rich foods often greatly exceeds the increase in plasma flavonoids. In the present study, six healthy subjects consumed five Red Delicious apples (1037 +/- 38 g), plain bagels (263.1 +/- 0.9 g) and water matching the carbohydrate content and mass of the apples, and fructose (63.9 +/- 2.9 g) in water matching the fructose content and mass of the apples. The antioxidant capacity of plasma was measured before and up to 6 h after food consumption as ferric reducing antioxidant potential (FRAP), without or with ascorbate oxidase treatment (FRAPAO) to estimate the contribution of ascorbate. Baseline plasma FRAP and FRAPAO were 445 +/- 35 and 363 +/- 35 microM trolox equivalents, respectively. Apple consumption caused an acute, transient increase in both plasma FRAP and FRAPAO, with increases after 1 h of 54.6 +/- 8.7 and 61.3 = 17.2 microM trolox equivalents, respectively. This increase in plasma antioxidant capacity was paralleled by a large increase in plasma urate, a metabolic antioxidant, from 271 +/- 39 microM at baseline to 367 +/- 43 microM after 1 h. In contrast, FRAP and FRAPAO time-dependently decreased

after bagel consumption, together with urate. Consumption of fructose mimicked the effects of apples with respect to increased FRAP, FRAPAO, and urate, but not ascorbate. Taken together, our data show that the increase in plasma antioxidant capacity in humans after apple consumption is due mainly to the well-known metabolic effect of fructose on urate, not apple-derived antioxidant flavonoids
Notes: DA - 20040618
IS - 0891-5849
LA - eng
PT - Journal Article
SB - IM

158. Lotito,S.B., andB.Frei. 2004. Relevance of apple polyphenols as antioxidants in human plasma: contrasting in vitro and in vivo effects. Free Radic. Biol. Med. 36:201-211.
Ref ID: 1859
Keywords: 40/alpha-Tocopherol/antioxidant/Antioxidants/Chlorogenic Acid/Chronic Disease/Diet/Disease/diseases/flavanols/flavonoid/Flavonoids/Flavonols/Food/foods/Human/In Vitro/Lipid Peroxidation/Lipids/Phenol/Phenols/Plasma/polyphenols/Quercetin/Rutin/Time
Reprint: Not in File
Abstract: Apples are a major source of flavonoids in the Western diet, and flavonoid-rich foods may help protect against chronic diseases by antioxidant mechanisms. In the present study we investigated: (1) the antioxidant capacity of representative apple polyphenols and their contribution to the total antioxidant capacity of apple extracts; (2) the effects of adding apple extract to human plasma in vitro on oxidation of endogenous antioxidants and lipids; and (3) the effects of apple consumption by humans on ex vivo oxidation of plasma antioxidants and lipids. We found that the apple-contained flavonols and flavanols, quercetin, rutin, (-)-epicatechin, and (+)-catechin, had a higher antioxidant capacity than the dihydrochalcones, phloridzin and phloretin, and the hydroxycinnamate, chlorogenic acid. However, together these apple polyphenols contributed less than 20% to the total antioxidant capacity of aqueous apple extracts. When human plasma was exposed to a constant flux of aqueous peroxyl radicals, endogenous ascorbate (70.0 +/- 10.3 microM) was oxidized within 45 min of incubation, while endogenous urate (375 +/- 40 microM) and alpha-tocopherol (24.7 +/- 1.2 microM) were oxidized after ascorbate. Addition of 7.1 or 14.3 micrograms/ml total phenols of apple extract did not protect ascorbate from oxidation, but increased the half-life (t1/2) of urate from 136 +/- 15 to 192 +/- 16 and 208 +/- 23 min, respectively ($p < 0.05$ each), and t1/2 of alpha-tocopherol from 141 +/- 18 to 164 +/- 8 min (p = ns) and 188 +/- 8 min ($p < 0.05$). Lipid peroxidation started after ascorbate depletion, and addition of apple extract increased the lag time preceding detectable lipid peroxidation from 36.3 +/- 3.7 to 50.9 +/- 2.7 min ($p < 0.05$) and 70.4 +/- 4.2 min ($p < 0.001$). However, when six healthy volunteers ate five apples and plasma was obtained up to 4 h after apple consumption, no significant increases in the resistance to oxidation of endogenous urate, alpha-tocopherol, and lipids were found. Thus, despite the high antioxidant capacity of individual apple polyphenols and apple extracts and the significant antioxidant effects of apple extract added to human plasma in vitro, ingestion of large amounts of apples by humans does not appear to result in equivalent in vivo antioxidant effects of apple polyphenols
Notes: DA - 20040127
IS - 0891-5849
LA - eng
PT - Journal Article
SB - IM

159. Lotito,S.B., andB.Frei. 2004. The increase in human plasma antioxidant capacity after apple consumption is due to the metabolic effect of fructose on urate, not apple-derived antioxidant flavonoids. Free Radic. Biol. Med. 37:251-258.
Ref ID: 1858
Keywords: antioxidant/Cardiovascular Diseases/Disease/diseases/flavonoid/Flavonoids/Food/foods/Fruit/Human/Plasma/Risk/

Water
Reprint: Not in File
Abstract: Regular fruit consumption lowers the risk of cardiovascular diseases and certain cancers, which has been attributed in part to fruit-derived antioxidant flavonoids. However, flavonoids are poorly absorbed by humans, and the increase in plasma antioxidant capacity observed after consumption of flavonoid-rich foods often greatly exceeds the increase in plasma flavonoids. In the present study, six healthy subjects consumed five Red Delicious apples (1037 +/- 38 g), plain bagels (263.1 +/- 0.9 g) and water matching the carbohydrate content and mass of the apples, and fructose (63.9 +/- 2.9 g) in water matching the fructose content and mass of the apples. The antioxidant capacity of plasma was measured before and up to 6 h after food consumption as ferric reducing antioxidant potential (FRAP), without or with ascorbate oxidase treatment (FRAPAO) to estimate the contribution of ascorbate. Baseline plasma FRAP and FRAPAO were 445 +/- 35 and 363 +/- 35 microM trolox equivalents, respectively. Apple consumption caused an acute, transient increase in both plasma FRAP and FRAPAO, with increases after 1 h of 54.6 +/- 8.7 and 61.3 = 17.2 microM trolox equivalents, respectively. This increase in plasma antioxidant capacity was paralleled by a large increase in plasma urate, a metabolic antioxidant, from 271 +/- 39 microM at baseline to 367 +/- 43 microM after 1 h. In contrast, FRAP and FRAPAO time-dependently decreased after bagel consumption, together with urate. Consumption of fructose mimicked the effects of apples with respect to increased FRAP, FRAPAO, and urate, but not ascorbate. Taken together, our data show that the increase in plasma antioxidant capacity in humans after apple consumption is due mainly to the well-known metabolic effect of fructose on urate, not apple-derived antioxidant flavonoids
Notes: DA - 20040618
IS - 0891-5849
LA - eng
PT - Journal Article
SB - IM

160. Lotito,S.B., andB.Frei. 2004. Relevance of apple polyphenols as antioxidants in human plasma: contrasting in vitro and in vivo effects. Free Radic. Biol. Med. 36:201-211.
Ref ID: 2
Keywords: 40/alpha-Tocopherol/antioxidant/Antioxidants/Chlorogenic Acid/Chronic Disease/Diet/Disease/diseases/flavanols/flavonoid/Flavonoids/Flavonols/Food/foods/Human/In Vitro/Lipid
Peroxidation/Lipids/Phenol/Phenols/Plasma/polyphenols/Quercetin/Rutin/Time
Reprint: Not in File
Abstract: Apples are a major source of flavonoids in the Western diet, and flavonoid-rich foods may help protect against chronic diseases by antioxidant mechanisms. In the present study we investigated: (1) the antioxidant capacity of representative apple polyphenols and their contribution to the total antioxidant capacity of apple extracts; (2) the effects of adding apple extract to human plasma in vitro on oxidation of endogenous antioxidants and lipids; and (3) the effects of apple consumption by humans on ex vivo oxidation of plasma antioxidants and lipids. We found that the apple-contained flavonols and flavanols, quercetin, rutin, (-)-epicatechin, and (+)-catechin, had a higher antioxidant capacity than the dihydrochalcones, phloridzin and phloretin, and the hydroxycinnamate, chlorogenic acid. However, together these apple polyphenols contributed less than 20% to the total antioxidant capacity of aqueous apple extracts. When human plasma was exposed to a constant flux of aqueous peroxyl radicals, endogenous ascorbate (70.0 +/- 10.3 microM) was oxidized within 45 min of incubation, while endogenous urate (375 +/- 40 microM) and alpha-tocopherol (24.7 +/- 1.2 microM) were oxidized after ascorbate. Addition of 7.1 or 14.3 micrograms/ml total phenols of apple extract did not protect ascorbate from oxidation, but increased the half-life (t1/2) of urate from 136 +/- 15 to 192 +/- 16 and 208 +/- 23 min, respectively ($p < 0.05$ each), and t1/2 of alpha-tocopherol from 141 +/- 18 to 164 +/- 8 min (p = ns) and 188 +/- 8 min ($p < 0.05$). Lipid peroxidation started after ascorbate depletion, and addition of apple extract increased the lag time preceding detectable lipid peroxidation from 36.3 +/- 3.7 to 50.9 +/- 2.7 min ($p < 0.05$) and 70.4 +/- 4.2 min ($p < 0.001$). However, when six healthy volunteers ate

five apples and plasma was obtained up to 4 h after apple consumption, no significant increases in the resistance to oxidation of endogenous urate, alpha-tocopherol, and lipids were found. Thus, despite the high antioxidant capacity of individual apple polyphenols and apple extracts and the significant antioxidant effects of apple extract added to human plasma in vitro, ingestion of large amounts of apples by humans does not appear to result in equivalent in vivo antioxidant effects of apple polyphenols
Notes: DA - 20040127
IS - 0891-5849
LA - eng
PT - Journal Article
SB - IM

161. Lu,L.J., J.A.Tice, and F.L.Bellino. 2001. Phytoestrogens and healthy aging: gaps in knowledge. A workshop report. Menopause. 8:157-170.
Ref ID: 358
Keywords: Aging/Animals/Bone Diseases/Cardiovascular Diseases/Dementia/Dietary Supplements/Estrogens,Non-Steroidal/Female/Food/Health/Hot Flashes/Human/Isoflavones/Menopause/Osteoporosis,Postmenopausal/Plant Preparations/prevention & control/Proteins/Risk/Soybean Proteins
Reprint: Not in File
Abstract: There is an increasing public interest in foods and dietary supplements containing phytoestrogens for the maintenance of health. A workshop was convened to assess evidence for the potential benefits of phytoestrogen-containing foods or supplements on diseases or conditions affecting older populations. Preclinical, clinical, and epidemiologic data on the cardiovascular system, various cancers, bone diseases, and menopausal symptoms were the focus of the discussions. Research on the basis of consumer food choices as well as a presentation from the FDA regarding approval of the use of soy foods to reduce the risk of cardiovascular disease were also presented. Based on the information presented, isoflavone-containing soy foods may have favorable effects on the cardiovascular system, but major knowledge gaps still exist regarding effects ofphytoestrogen supplements on bone diseases, various cancers, menopausal symptoms, and cognitive function
Notes: DA - 20010516
IS - 1072-3714
LA - eng
PT - Congresses
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (Soybean Proteins)
RN - 0 (phytoestrogens)
SB - IM

162. Lugasi,A., A.Blazovics, and J.Feher. 1999. [In vitro findings of antioxidant properties of Hungarian red wines]. Orv. Hetil. 140:2051-2056.
Ref ID: 491
Keywords: analysis/Antioxidants/Chelating Agents/English Abstract/Flavonoids/Health/Human/Hungary/In Vitro/Phenols/Polymers/Wine
Reprint: Not in File
Abstract: In the present study the antioxidant activity of some selected Hungarian red wines produced in traditional wine-growing regions of the country was investigated in different chemical systems. All the samples exhibited strong hydrogen-donating ability, showed significant reducing power and copper-chelating ability. The samples could retard the autooxidation of linoleic acid during a 10-days incubation period at 40 degrees C. All the investigated properties depended on the total polyphenol content of the wines. The highest polyphenol content and antioxidant activity was in Pinot Noir and in Merlot from Villany. Results of this research and other literary data indicate that polyphenols in the concentrations in wines consumed frequently, and moderately together with meal can give an antioxidative

contribution to the human health
Notes: DA - 19991012
IS - 0030-6002
LA - hun
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Chelating Agents)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (polyphenols)
SB - IM

163. Lundegardh,B., andA.Martensson. 2003. Organically Produced Plant Foods - Evidence of Health Beneftis. Acta Agriculturae Scandinavica, Section B - Plant Soil Science 53:3-15.
Ref ID: 675
Keywords: Food/Health
Reprint: In File

164. Macheix,J.J., A.Fleuriet, and J.Billot. 1990. Fruit Phenolics. CRC Press, Boca Raton, FL.
Ref ID: 1835
Keywords: Fruit/phenolics
Reprint: Not in File

165. Makris,D.P., andJ.T.Rossiter. 2001. Domestic processing of onion bulbs (Allium cepa) and asparagus spears (Asparagus officinalis): effect on flavonol content and antioxidant status. J Agric Food Chem. 49:3216-3222.
Ref ID: 735
Keywords: Allium/analysis/antioxidant/Antioxidants/beta Carotene/chemistry/diagnostic use/flavonoid/Flavonoids/Flavonols/Food/Food Handling/food quality/Heat/Liliaceae/methods/Onions/quality/Quercetin/Rutin
Reprint: Not in File
Abstract: Two commonly consumed plant foods, onion bulbs and asparagus spears, were subjected to typical domestic processing, including chopping, maceration, and boiling. The impact of these processes on flavonol content was assessed. Further, the consequences of these processes on the antioxidant capacity of the tissues were evaluated with the beta-carotene bleaching method. Chopping significantly affected rutin content in asparagus, yielding an 18.5% decrease in 60 min; but in onions, quercetin 3,4'-diglucoside (Q(DG)) and quercetin 4'-glucoside (Q(MG)) were virtually unaffected by chopping. Boiling for 60 min had more severe effects, as it caused overall flavonol losses of 20.6 and 43.9% in onions and asparagus, respectively. Chopping of tissues did not considerably influence the antioxidant capacity, but boiling did provoke notable changes
Notes: DA - 20010716
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 7235-40-7 (beta Carotene)
SB - IM

166. Malaveille,C., A.Hautefeuille, B.Pignatelli, G.Talaska, P.Vineis, and H.Bartsch. 1998. Antimutagenic dietary phenolics as antigenotoxic substances in urothelium of smokers. Mutat Res 402:219-224.

Ref ID: 683
Keywords: phenolics
Reprint: In File

167. Manach,C., A.Scalbert, C.Morand, C.Remesy, and L.Jimenez. 2004. Polyphenols: food sources and bioavailability. Am. J Clin Nutr. 79:727-747.
Ref ID: 7
Keywords: Biological Availability/chemistry/drug effects/Flavonoids/Food Analysis/Human/Intestinal Absorption/metabolism/pharmacokinetics/Phenols/physiology/Tissue Distribution
Reprint: Not in File
Abstract: Polyphenols are abundant micronutrients in our diet, and evidence for their role in the prevention of degenerative diseases such as cancer and cardiovascular diseases is emerging. The health effects of polyphenols depend on the amount consumed and on their bioavailability. In this article, the nature and contents of the various polyphenols present in food sources and the influence of agricultural practices and industrial processes are reviewed. Estimates of dietary intakes are given for each class of polyphenols. The bioavailability of polyphenols is also reviewed, with particular focus on intestinal absorption and the influence of chemical structure (eg, glycosylation, esterification, and polymerization), food matrix, and excretion back into the intestinal lumen. Information on the role of microflora in the catabolism of polyphenols and the production of some active metabolites is presented. Mechanisms of intestinal and hepatic conjugation (methylation, glucuronidation, sulfation), plasma transport, and elimination in bile and urine are also described. Pharmacokinetic data for the various polyphenols are compared. Studies on the identification of circulating metabolites, cellular uptake, intracellular metabolism with possible deconjugation, biological properties of the conjugated metabolites, and specific accumulation in some target tissues are discussed. Finally, bioavailability appears to differ greatly between the various polyphenols, and the most abundant polyphenols in our diet are not necessarily those that have the best bioavailability profile. A thorough knowledge of the bioavailability of the hundreds of dietary polyphenols will help us to identify those that are most likely to exert protective health effects
Notes: DA - 20040428
IS - 0002-9165
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (polyphenols)
SB - AIM
SB - IM

168. Marin,A., F.Ferreres, F.A.Tomas-Barberan, and M.I.Gil. 2004. Characterization and quantitation of antioxidant constituents of sweet pepper (Capsicum annuum L.). J Agric Food Chem. 52:3861-3869.
Ref ID: 725
Keywords: analysis/antioxidant/Ascorbic Acid/Capsicum/Carotenoids/comparison/flavonoid/Flavonoids/Food/Fruit/Hydrolysis/phenolics/polyphenols/quality/Quercetin/Research/Spain/Time/Vitamin C
Reprint: Not in File
Abstract: Sweet peppers (Capsicum annuum L.) cv. Vergasa have been studied at four maturity stages (immature green, green, immature red, and red). The individual phenolics (hydroxycinnamic acids and flavonoids), vitamin C (ascorbic acid and dehydroascorbic acid), and individual carotenoids were characterized and quantified. Five hydroxycinnamic derivatives and 23 flavonoids were characterized and quantified from the pericarp of sweet pepper by high-performance liquid chromatography-diode array detection-electrospray ionization-mass spectrometry. Identification was carried out by their UV spectra, chromatographic

comparisons with authentic markers, identification of hydrolysis products, and tandem mass spectrometry analysis. Hydroxycinnamic derivatives, O-glycosides of quercetin, luteolin, and chrysoeriol, and a large number of C-glycosyl flavones have been characterized. Some of these compounds were found for the first time in nature. Clear differences in the individual and total phenolic content were detected between the different maturity stages. Immature green pepper had a very high phenolic content while green, immature red, and red ripe peppers showed a 4-5-fold reduction. Ascorbic acid was the main form of vitamin C, and its content increased as the pepper reached maturity. The red ripe stage had a relevant impact on the carotenoids content. Thus, immature green peppers showed the highest content of polyphenols, while red ripe fruits had the highest content of vitamin C and provitamin A
Notes: DA - 20040609
IS - 0021-8561
LA - eng
PT - Journal Article
SB - IM

169. Martinez-Valverde,I., M.J.Periago, G.Provan, and A.Chesson. 2002. Phenolic compounds, lycopene and antioxidant activity in commercial varieties of tomato (*Lycopersicum esculentum*). J Sci Food Agric 82:323-330.
Ref ID: 703
Keywords: antioxidant/lycopene/Tomato
Reprint: In File

170. Maulik,G., N.Maulik, V.Bhandari, V.E.Kagan, S.Pakrashi, and D.K.Das. 1997. Evaluation of antioxidant effectiveness of a few herbal plants. Free Radic. Res 27:221-228.
Ref ID: 183
Keywords: analysis/Animals/antioxidant/Antioxidants/Cells,Cultured/Chemiluminescence/chemistry/Cytochrome c Group/cytology/Deoxyribose/drug effects/Hydroxyl Radical/Lung/Male/metabolism/Methanol/methods/organic/Oxygen/pharmacology/Plant Extracts/Plants/Plants,Medicinal/Rats/Rats,Sprague-Dawley/Soil/Solvents/Superoxides/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./toxicity
Reprint: Not in File
Abstract: We have screened a number of plants from the Indian soil for potential antioxidant properties out of which fifteen extracts were found to be positive. Leaves/bulk from the plants were crushed and extracted with organic solvents by three different ways. The first group of plants were extracted with CHCL3:CH3OH (2:1), evaporated, partitioned between petroleum ether and methanol (9:1), aqueous methanolic part re-partitioned between methanol:H2O (4:1) and dichloromethane. Methanol was evaporated from the aqueous methanolic part and extracted with n-butanol. The second group of plants were extracted with methanol followed by partitioning between petroleum ether and CH3OH. The rest of the extraction procedure was the same as above. A third extraction procedure was used for Ocimum sanctum which after extraction with CHCL3:CH3OH (2:1), partitioned between CCL4 and CH3OH:H2O (9:1). Aqueous methanolic part was repartitioned between CH3OH:H2O (4:1) and CHCl3 and CHCl3 soluble part was used for the study. Free radical scavenging activities of the plant extracts were examined by chemiluminescence method. Peroxyl radical was generated from 2,2'-azobis(2-amidinopropane) dihydrochloride (AAPH), superoxide radical (O2-) from xanthine/xanthine oxidase (XO) and hydroxyl radical (OH) from Xanthine/XO/FeCl3/EDTA. In addition, O2- and OH. scavenging activities were also determined by cytochrome C reduction and deoxyribose oxidation methods, respectively. The results of this study demonstrate that these plant extracts possess potent antioxidant activities
Notes: DA - 19980130
IS - 1071-5762
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)

RN - 0 (Cytochrome c Group)
RN - 0 (Plant Extracts)
RN - 11062-77-4 (Superoxides)
RN - 3352-57-6 (Hydroxyl Radical)
RN - 533-67-5 (Deoxyribose)
RN - 7782-44-7 (Oxygen)
SB - IM

171. Mazur,W. 1998. Phytoestrogen content in foods. Baillieres Clin Endocrinol. Metab 12:729-742.
Ref ID: 501
Keywords: analysis/Beverages/Cereals/chemistry/Estrogens,Non-Steroidal/Fabaceae/Finland/Food/Food Analysis/Fruit/Genistein/Health/Heart/Human/Isoflavones/Lignans/Nuts/Plant Preparations/Plants,Medicinal/Tea/Vegetables/Wine
Reprint: Not in File
Abstract: Plants abound in essential phytochemicals produced for their various vital functions. The same compounds seem also to be crucial for human health and disease. Recent human epidemiological and laboratory animal and cell studies on cancer and heart disease have highlighted the phytoestrogens--naturally occurring principles that share with steroidal oestrogens an ability to activate oestrogen receptors. The best known non-steroidal phytoestrogens include the isoflavones daidzein, genistein, formononetin and biochanin A, the coumestan coumestrol, and the lignans secoisolariciresinol and matairesinol. Acknowledging the potentially chemoprotective role of these non-nutrients, we have quantified all biologically important isoflavonoids and lignans in cereals, oilseeds and nuts, legumes, vegetables, fruits, berries and beverages such as tea, coffee and wine. In this chapter, we present a review of our studies on staple plant foods, indicating that plants contain, besides a wide range of chemicals with a number of biological properties, biologically active phytoestrogens--precursors of hormone-like compounds found in mammalian systems
Notes: DA - 19990819
IS - 0950-351X
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

172. McBride, J. Can Foods Forestall Aging? Agricultural Research [February 1999]. 2-1-1999.
Ref Type: Magazine Article
Ref ID: 672
Keywords: Aging/antioxidant/Food/ORAC

173. Mennen,L.I., D.Sapinho, A.de Bree, N.Arnault, S.Bertrais, P.Galan, and S.Hercberg. 2004. Consumption of foods rich in flavonoids is related to a decreased cardiovascular risk in apparently healthy French women. J Nutr. 134:923-926.
Ref ID: 760
Keywords: administration & dosage/Adult/analysis/antioxidant/blood/Blood Glucose/Blood Pressure/Body Mass Index/Cardiovascular Diseases/Cholesterol/Chronic Disease/Comparative Study/Cross-Sectional Studies/Diet/Diet Records/Disease/Double-Blind Method/epidemiology/Fasting/Female/flavonoid/Flavonoids/Food/France/Fruit/Glucose/Human/Incidence/Logistic Models/Male/Middle Aged/Nutrition/Odds Ratio/Onions/Placebos/prevention & control/Risk/Risk Factors/Sex Characteristics/Support,Non-U.S.Gov't/Tea/Wine

Reprint: Not in File
Abstract: A high consumption of flavonoids may lower cardiovascular risk through their antioxidant capacity. This study evaluated the relation between consumption of foods rich in flavonoids and estimated cardiovascular risk. A cross-sectional analysis was performed in 1286 women and 1005 men of the SU.VI.MAX Study (an 8-y trial evaluating the effect of antioxidant supplementation on the incidence of major chronic diseases). Dietary intakes were estimated using six 24-h dietary records collected during the year between the clinical measurement of blood pressure, weight and height and the biological measurement of total serum cholesterol and fasting plasma glucose. The relation between flavonoid rich food consumption and cardiovascular risk factors was evaluated with analyses of covariance and the effect on cardiovascular risk with logistic regression analyses. In women, flavonoid-rich food consumption was inversely related to systolic blood pressure (P = 0.005). No relation between risk factors and flavonoid-rich food consumption was seen in men. Women in the highest tertile of flavonoid-rich food consumption were at lower risk for cardiovascular disease [odds ratio (OR): 0.31; 95%CI: 0.14, 0.68], whereas a positive tendency was seen in men (OR: 1.38; 95%CI: 0.96, 2.00). These results indicate that in women, a high consumption of flavonoid-rich foods may prevent cardiovascular disease
Notes: DA - 20040330
IS - 0022-3166
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Blood Glucose)
RN - 0 (Flavonoids)
RN - 0 (Placebos)
SB - IM

174. Meyers,K.J., C.B.Watkins, M.P.Pritts, and R.H.Liu. 2003. Antioxidant and antiproliferative activities of strawberries. J Agric Food Chem. 51:6887-6892.
Ref ID: 56
Keywords: analysis/Anthocyanins/Antioxidants/Carcinoma,Hepatocellular/Cell Division/chemistry/drug effects/Flavonoids/Fragaria/Fruit/Human/Liver Neoplasms/pathology/pharmacology/Phenols/Plant Extracts/Solubility/Tumor Cells,Cultured
Reprint: Not in File
Abstract: Strawberries contain high levels of antioxidants, which have been correlated with a decreased risk of chronic disease. To more fully characterize the antioxidant profiles and possible associated health benefits of this fruit, the total free and bound phenolic, total flavonoid, and total anthocyanin contents of eight strawberry cultivars (Earliglow, Annapolis, Evangeline, Allstar, Sable, Sparkle, Jewel, and Mesabi) were measured. Cultivar effects on phenolic contents were compared with antioxidant capacities, as measured by the total oxyradical scavenging capacity (TOSC) assay, and to antiproliferative activities, as measured by inhibition of HepG(2) human liver cancer cell proliferation in vitro. Free phenolic contents differed by 65% between the highest (Earliglow) and the lowest (Allstar) ranked cultivars. The water soluble bound and ethyl acetate soluble bound phenolic contents averaged 5% of the total phenolic content of the cultivars. The total flavonoid content of Annapolis was 2-fold higher than that of Allstar, which had the lowest content. The anthocyanin content of the highest ranked cultivar, Evangeline, was more than double that of the lowest ranked cultivar, Allstar. Overall, free phenolic content was weakly correlated with total antioxidant activity, and flavonoid and anthocyanin content did not correlate with total antioxidant activity. The proliferation of HepG(2) human liver cancer cells was significantly inhibited in a dose-dependent manner after exposure to all strawberry cultivar extracts, with Earliglow exhibiting the highest antiproliferative activity and Annapolis exhibiting the lowest. No relationship was found between antiproliferative activity and antioxidant content
Notes: DA - 20031029
IS - 0021-8561

LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Plant Extracts)
SB - IM

175. Middleton E Jr. 1988. Some biological properties of plant flavonoids. Ann. Allergy 61:53-57.
Ref ID: 625
Keywords: Animals/antagonists & inhibitors/Diet/Flavonoids/Fruit/Health/Human/Molecular Weight/Nuts/pharmacology/Plant Extracts/Protein Kinase C/Seeds/Structure-Activity Relationship/Tea/Vegetables/Wine
Reprint: Not in File
Abstract: The flavonoids are a large group of naturally occurring low molecular weight substances found in fruits, vegetables, nuts, seeds, flowers, and roots as well as wine and teas. They are consumed in the Western diet to the extent of about 1 gram per day. Flavonoids affect many mammalian cellular functions and enzyme systems. Their role in health and disease as natural biologic response modifiers remains to be determined
Notes: DA - 19890206
IS - 0003-4738
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Plant Extracts)
RN - EC 2.7.1.37 (Protein Kinase C)
SB - IM

176. Middleton E Jr. 1998. Effect of plant flavonoids on immune and inflammatory cell function. Adv. Exp. Med Biol 439:175-182.
Ref ID: 533
Keywords: Absorption/Animals/Anti-Inflammatory Agents/Diet/drug effects/drug therapy/Flavonoids/Fruit/Human/Immunity/In Vitro/Inflammation/Lymphocytes/Macrophages/metabolism/pharmacology/Plants/Tea/therapeutic use/Tyrosine/Vegetables/Wine
Reprint: Not in File
Abstract: The flavonoids are a large group of naturally occurring phenylchromones found in fruits, vegetables, grains, bark, roots, stems, flowers, tea, and wine. Up to several hundred milligrams are consumed daily in the average Western diet. Only limited information is available on the absorption, distribution, metabolism, and excretion of these compounds in man. Some compounds are absorbed, however, and measurable plasma concentrations are achieved which could have pharmacological relevance. A variety of in vitro and in vivo experiments have shown that selected flavonoids possess antiallergic, antiinflammatory, antiviral and antioxidant activities. Moreover, acting by several different mechanisms, particular flavonoids can exert significant anticancer activity including anticarcinogenic properties and even a prodifferentiative activity, amongst other modes of action. Certain flavonoids possess potent inhibitory activity against a wide array of enzymes, but of particular note is their inhibitory effects on several enzyme systems intimately connected to cell activation processes such as protein kinase C, protein tyrosine kinases, phospholipase A2, and others. Evidence suggests that only activated cells are susceptible to the modulating effects of flavonoids, i.e. cells which are responding to a stimulus. The stimulated activities of numerous cell types, including mast cells, basophils, neutrophils, eosinophils, T & B lymphocytes, macrophages, platelets, smooth muscle, hepatocytes, and others, can be influenced by particular flavonoids.

On balance, a considerable body of evidence suggests that plant flavonoids may be health-promoting, disease-preventing dietary compounds
Notes: DA - 19981201
IS - 0065-2598
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Anti-Inflammatory Agents)
RN - 0 (Flavonoids)
SB - IM

177. Miksicek,R.J. 1993. Commonly occurring plant flavonoids have estrogenic activity. Mol. Pharmacol. 44:37-43.
Ref ID: 614
Keywords: Binding,Competitive/biosynthesis/Cell Division/Chalcone/Diet/drug effects/Estradiol/Estrogens/Estrogens,Non-Steroidal/Flavanones/Flavonoids/Food/Health/Hela Cells/Human/metabolism/pharmacology/Plants/Proteins/Receptors,Estrogen/Recombinant Fusion Proteins/Risk/Structure-Activity Relationship/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./Transcription,Genetic/Tumor Cells,Cultured
Reprint: Not in File
Abstract: A remarkable diversity of naturally occurring and synthetic compounds have been shown to mimic the biological effects of 17 beta-estradiol by virtue of their ability to bind to and activate the nuclear estrogen receptor. This report extends the family of nonsteroidal estrogens to include several multiply hydroxylated chalcones, flavanones, and flavones. The hormone-like activity of these natural plant products is indicated by their ability to stimulate an estrogen receptor-dependent transcriptional response and to promote growth of estrogen-dependent MCF7 cells in culture. The transcriptional response can be inhibited by the steroidal estrogen antagonist ICI-164,384 and is specific for the estrogen receptor. Evidence is presented to show that selected hydroxylated flavonoids interact directly with the estrogen receptor, based on their ability to compete for the binding of 17 beta-[3H]estradiol to the receptor in cell-free extracts. These compounds are less active, on a molar basis, than 17 beta-estradiol or the synthetic dihydroxystilbene estrogens, but they have potencies comparable to those of other known phytoestrogens. Together, these findings broaden our understanding of the structure-activity relationships for nonsteroidal estrogens and present a series of new chemical prototypes for the future development of potentially useful agonists and antagonists for this nuclear receptor. The wide distribution of weakly estrogenic flavonoid pigments in food crops and medicinal plants raises additional questions about the possible health risks and benefits of these compounds, meriting closer examination of their presence in the human diet
Notes: DA - 19930827
IS - 0026-895X
LA - eng
PT - Journal Article
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Flavonoids)
RN - 0 (Receptors, Estrogen)
RN - 0 (Recombinant Fusion Proteins)
RN - 50-28-2 (Estradiol)
SB - IM

178. Milbury,P.E., G.Cao, R.L.Prior, and J.Blumberg. 2002. Bioavailablility of elderberry anthocyanins. Mech. Ageing Dev. 123:997-1006.
Ref ID: 257
Keywords: Aged/Anthocyanins/Antioxidants/Biological Availability/blood/Diet/Female/Flavonoids/Fruit/Glucosides/Glycosides/Health/Human/Kinetics/pharmacokinetics/Risk/Sambucus/urine/Vegetables/Washington/Wine

Reprint: Not in File
Abstract: Considerable epidemiological evidence suggests a link between the consumption of diets rich in fruits and vegetables and a decreased risk of cardiovascular disease and cancers. Anthocyanins have received attention as important dietary constituents that may provide health benefits and contribute antioxidant capacity beyond that provided by essential micronutrients such as ascorbate, tocopherols, and selenium. The emergence of renewed interest by industrial countries in traditional herbal medicines and the development of 'functional foods' are stimulating the need for more information regarding the bioavailability and efficacy of plant polyphenols. Flavonoids represent a numerous group of secondary plant metabolites based on the structure of a pyran ring flanked by two or more phenyl rings and varying subtly in the degree of unsaturation and the pattern of hydroxylation or methylation. Flavonoids also vary in the type of sugar attached or the degree of polymerization. Anthocyanins, potent flavonoid antioxidants widely distributed in fruits, vegetables and red wines, normally occur in nature as glycosides, a form not usually considered as bioavailable. We have examined the bioavailability and pharmacokinetics of anthocyanins in humans. Anthocyanins were detected as glycosides in both plasma and urine samples. The elimination of plasma anthocyanins appeared to follow first-order kinetics and most anthocyanin compounds were excreted in urine within 4 h after feeding. The current findings appear to refute assumptions that anthocyanins are not absorbed in their unchanged glycosylated forms in humans
Notes: DA - 20020604
IS - 0047-6374
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Glucosides)
RN - 7084-24-4 (cyanidin 3-O-glucoside)
SB - IM

179. Minoggio,M., L.Bramati, P.Simonetti, C.Gardana, L.Iemoli, E.Santangelo, P.L.Mauri, P.Spigno, G.P.Soressi, and P.G.Pietta. 2003. Polyphenol pattern and antioxidant activity of different tomato lines and cultivars. Ann. Nutr. Metab 47:64-69.
Ref ID: 149
Keywords: analysis/Antioxidants/beta Carotene/Carotenoids/chemistry/Chromatography,High Pressure Liquid/Flavonoids/Flavonols/Fruit/genetics/Human/Lycopersicon esculentum/metabolism/methods/Minerals/Phenols/Polymers/Spectrophotometry/Support, Non-U.S.Gov't/Vegetables/Vitamins
Reprint: Not in File
Abstract: BACKGROUND/AIMS: Besides antioxidant vitamins and minerals, fruits and vegetables contain flavonoids and related phenolics. The biological activities of these polyphenols have become well known in recent years evidencing their beneficial effects on human health. In this context, the characterization of the flavonoids present in tomatoes is of great interest. Thus the polyphenol pattern (including flavonols, flavanones and cinnamate derivatives), lycopene and beta-carotene concentrations and the total antioxidant activity (TAA) of the phenolic fraction from different tomato lines and cultivars have been determined. METHODS: The characterization was obtained by means of spectrophotometry and HPLC analyses. RESULTS: Mean values for single flavonoids were 0.68 +/- 0.16 for naringenin, 0.74 +/- 0.12 for rutin and 0.32 +/- 0.06 for a rutin-pentoside. Mean total polyphenol content was 13.15 +/- 1.15 mg/100 g and mean TAA value was 1.3 +/- 0.10 mmol/g. The obtained TAA values resulted in good accordance with the total polyphenol content (R(2) = 0.7928). The main phenolic acids were chlorogenic (mean +/- SE 0.20 +/- 0.03) and caffeic acid (mean +/- SE 0.03 +/- 0.01). Mean levels of lycopene and beta-carotene were 5.38 +/- 0.90 and 1.18 +/- 0.40 mg/100 g, respectively. CONCLUSIONS: Almost all the lines characterised by low carotenoid content produce high levels of polyphenols, and consequently have the most powerful antioxidant potential
Notes: DA - 20030324
IS - 0250-6807

LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 36-88-4 (Carotenoids)
RN - 502-65-8 (lycopene)
RN - 7235-40-7 (beta Carotene)
SB - IM

180. Mitchell,A.E., andD.M.Barrett. 2003. Rebuttal on Comparison of the Total Phenolic and Axcorbic Acid Content of Freeze-Dried and Air-Dried Marionberry, Strawberry, and Corn Grown Using Conventional, Organic, and Sustainable Agricultural Practices. J Agric Food Chem. 52:150-152.
Ref ID: 659
Keywords: comparison/conventional/organic/strawberries
Reprint: In File

181. Mokdad,A.H., J.S.Marks, D.F.Stroup, and J.L.Gerberding. 2004. Actual causes of death in the United States, 2000. JAMA 291:1238-1245.
Ref ID: 1840
Keywords: Accidents,Traffic/Adult/Aging/Alcohol Drinking/Cause of Death/Communicable Diseases/Diet/Disease/epidemiology/Health/health care costs/Human/mortality/Physical Fitness/Poisoning/Prevalence/Risk/Risk Factors/Sexual Behavior/Smoking/Substance-Related Disorders/trends/United States/Wounds,Gunshot
Reprint: Not in File
Abstract: CONTEXT: Modifiable behavioral risk factors are leading causes of mortality in the United States. Quantifying these will provide insight into the effects of recent trends and the implications of missed prevention opportunities. OBJECTIVES: To identify and quantify the leading causes of mortality in the United States. DESIGN: Comprehensive MEDLINE search of English-language articles that identified epidemiological, clinical, and laboratory studies linking risk behaviors and mortality. The search was initially restricted to articles published during or after 1990, but we later included relevant articles published in 1980 to December 31, 2002. Prevalence and relative risk were identified during the literature search. We used 2000 mortality data reported to the Centers for Disease Control and Prevention to identify the causes and number of deaths. The estimates of cause of death were computed by multiplying estimates of the cause-attributable fraction of preventable deaths with the total mortality data. MAIN OUTCOME MEASURES: Actual causes of death. RESULTS: The leading causes of death in 2000 were tobacco (435 000 deaths; 18.1% of total US deaths), poor diet and physical inactivity (400 000 deaths; 16.6%), and alcohol consumption (85 000 deaths; 3.5%). Other actual causes of death were microbial agents (75 000), toxic agents (55 000), motor vehicle crashes (43 000), incidents involving firearms (29 000), sexual behaviors (20 000), and illicit use of drugs (17 000). CONCLUSIONS: These analyses show that smoking remains the leading cause of mortality. However, poor diet and physical inactivity may soon overtake tobacco as the leading cause of death. These findings, along with escalating health care costs and aging population, argue persuasively that the need to establish a more preventive orientation in the US health care and public health systems has become more urgent
Notes: DA - 20040310
IS - 1538-3598
LA - eng
PT - Journal Article
PT - Review
PT - Review, Multicase
SB - AIM
SB - IM

182. Morton,D.L., andK.Griffiths. 1999. Diet and its preventive role in prostatic disease. Eur Urol 35:377-387.
Ref ID: 682
Keywords: Diet/Disease
Reprint: In File

183. Muir,S.R., G.J.Collins, S.Robinson, S.Hughes, A.Bovy, D.Ric, V, A.J.van Tunen, and M.E.Verhoeyen. 2001. Overexpression of petunia chalcone isomerase in tomato results in fruit containing increased levels of flavonols. Nat. Biotechnol. 19:470-474.
Ref ID: 366
Keywords: analogs & derivatives/Antioxidants/biosynthesis/Chalcone/chemistry/Flavonoids/Flavonols/Food/Food Handling/Fruit/genetics/Health/Intramolecular Lyases/Lycopersicon esculentum/metabolism/Onions/Plants,Genetically Modified/Prostate/Quercetin/Rhizobium/Risk/Rutin/Time Factors/Transformation,Genetic/Up-Regulation
Reprint: Not in File
Abstract: Tomatoes are an excellent source of the carotenoid lycopene, a compound that is thought to be protective against prostate cancer. They also contain small amounts of flavonoids in their peel (approximately 5-10 mg/kg fresh weight), mainly naringenin chalcone and the flavonol rutin, a quercetin glycoside. Flavonols are very potent antioxidants, and an increasing body of epidemiological data suggests that high flavonoid intake is correlated with a decreased risk for cardiovascular disease. We have upregulated flavonol biosynthesis in the tomato in order to generate fruit with increased antioxidant capacity and a wider range of potential health benefit properties. This involved transformation of tomato with the Petunia chi-a gene encoding chalcone isomerase. Resulting transgenic tomato lines produced an increase of up to 78 fold in fruit peel flavonols, mainly due to an accumulation of rutin. No gross phenotypical differences were observed between high-flavonol transgenic and control lines. The phenotype segregated with the transgene and demonstrated a stable inheritance pattern over four subsequent generations tested thus far. Whole-fruit flavonol levels in the best of these lines are similar to those found in onions, a crop with naturally high levels of flavonol compounds. Processing of high-flavonol tomatoes demonstrated that 65% of flavonols present in the fresh fruit were retained in the processed paste, supporting their potential as raw materials for tomato-based functional food products
Notes: DA - 20010430
IS - 1087-0156
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 153-18-4 (Rutin)
RN - 73692-50-9 (naringenin chalcone)
RN - 94-41-7 (Chalcone)
RN - EC 5.5 (Intramolecular Lyases)
RN - EC 5.5.1.6 (chalcone isomerase)
SB - IM

184. Murcia,M.A., M.Martinez-Tome, A.M.Jimenez, A.M.Vera, M.Honrubia, and P.Parras. 2002. Antioxidant activity of edible fungi (truffles and mushrooms): losses during industrial processing. J Food Prot. 65:1614-1622.
Ref ID: 732
Keywords: Agaricales/alpha-Tocopherol/antioxidant/Antioxidants/Comparative Study/Deoxyribose/drug effects/Fatty Acids/Food/Food Additives/Food Analysis/Food Handling/Free Radicals/Freezing/Fungi/Lipid Peroxidation/Lipids/metabolism/methods/Oxidation-Reduction/Peroxidase/pharmacology/Spain/Support,Non-U.S.Gov't/veterinary
Reprint: Not in File
Abstract: The antioxidant properties of two raw truffles (Terfezia claveryi Chatin and Picoa

juniperi Vittadini) and five raw mushrooms (Lepista nuda, Lentinus edodes, Agrocybe cylindracea, Cantharellus lutescens, and Hydnum repandum) were tested by subjecting these truffles and mushrooms to different industrial processes (freezing and canning) and comparing them with common food antioxidants (alpha-tocopherol [E-307], BHA [E-320], BHT [E-321], and propyl gallate [E-310]) with regard to their ability to inhibit lipid oxidation. All of the truffles and mushrooms analyzed exhibited higher percentages of oxidation inhibition than did the food antioxidants according to assays based on lipid peroxidation (LOO*), deoxyribose (OH*), and peroxidase (H2O2). Frozen samples exhibited a small reduction in free radical scavenger activity, but the results did not show a significant difference ($P < 0.05$) with respect to the raw samples, while canned truffles and mushrooms lost some antioxidant activity as a consequence of industrial processing. All of the raw and frozen truffles and mushrooms except frozen Cantharellus improved the stability of oil against oxidation (100 degrees C Rancimat), while canned samples accelerated oil degradation. Antioxidant activity during 30 days of storage was measured by the linoleic acid assay, and all of the samples except canned Terfezia, Picoa, and Hydnum showed high or medium antioxidant activity. The Trolox equivalent antioxidant capacity assay was used to provide a ranking order of antioxidant activity as measured against that of Trolox (a standard solution used to evaluate equivalent antioxidant capacity). The order of raw samples with regard to antioxidant capacity was as follows (in decreasing order): Cantharellus, Agrocybe, Lentinus, Terfezia, Picoa, Lepista, and Hydnum. Losses of antioxidant activity were detected in the processed samples of these truffles and mushrooms
Notes: DA - 20021016
IS - 0362-028X
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Fatty Acids)
RN - 0 (Food Additives)
RN - 0 (Free Radicals)
RN - 0 (Lipids)
RN - 0 (lipid peroxidation inhibitor)
SB - IM

185. Ness,A.R., andJ.W.Powles. 1997. Fruit and vegetables, and cardiovascular disease: a review. Int. J. Epidemiol. 26:1-13.
Ref ID: 754
Keywords: Disease/Fruit/Vegetables
Reprint: In File

186. Nielsen,S.E., R.Freese, P.Kleemola, and M.Mutanen. 2002. Flavonoids in human urine as biomarkers for intake of fruits and vegetables. Cancer Epidemiol Biomarkers Prev. 11:459-466.
Ref ID: 266
Keywords: Adult/Ascorbic Acid/Biological Markers/blood/Carotenoids/Comparative Study/Diet/Diet Records/Eating/epidemiology/Fatty Acids/Female/Finland/Flavanones/Flavonoids/Flavonols/Food Habits/Fruit/Glycosides/Health/Human/Intervention Studies/Male/Middle Aged/psychology/Quercetin/Sensitivity and Specificity/Statistics,Nonparametric/Support,Non-U.S.Gov't/urine/Vegetables
Reprint: Not in File
Abstract: Flavonoids are polyphenolic compounds ubiquitously found in human diets. We have studied the association between urinary excretion of flavonoids and the intake of fruits and vegetables to evaluate the usefulness of flavonoids as a biomarker for fruit and vegetable intake. Levels of 12 dietary relevant flavonoids were determined by LC-MS in urine samples collected prior to an intervention study, when the subjects were on their habitual diet (n = 94), and after they had participated in an intervention study with diets either high or low in fruits, berries, and vegetables (n = 77). Both flavonoid glycosides and aglycones were included in the assay, but only the flavonoid aglycones were detectable. Thus, the flavonols quercetin,

kaempferol, isorhamnetin, and tamarixetin, the dihydrochalcone phloretin, and the flavanones naringenin and hesperetin were quantified in the enzymatically hydrolyzed urine samples. The habitual intake of fruits and vegetables, determined by 3-day dietary records before the intervention study, correlated significantly with the total excretion of urinary flavonoids, with a coefficient of correlation of 0.35, $P < 0.005$ ($n = 94$). In addition, highly significant differences in the urinary excretion of all flavonoids were observed in the human intervention study between subjects on diets high or low in fruits, berries, and vegetables. Also, at the individual level a significant positive correlation between changes in fruit and vegetable intake and changes in urinary flavonoid excretion was observed. We conclude that urinary flavonoids may be useful as a new biomarker for fruit, berry, and vegetable intakes and may prove useful when the possible health protective effects of flavonoids are studied
Notes: DA - 20020515
IS - 1055-9965
LA - eng
PT - Evaluation Studies
PT - Journal Article
RN - 0 (Biological Markers)
RN - 0 (Fatty Acids)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 36-88-4 (Carotenoids)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

187. Niggeweg,R., A.J.Michael, and C.Martin. 2004. Engineering plants with increased levels of the antioxidant chlorogenic acid. Nat. Biotechnol. 22:746-754.
Ref ID: 761
Keywords: Animals/antioxidant/Antioxidants/Chlorogenic Acid/Diet/Disease/Food/Health/Human/human health/phenolics/Plants/Research/Tomato
Reprint: Not in File
Abstract: The trend to view many foods not only as sustenance but also as medicine, so-called functional foods, is increasing. Phenolics are the most widespread dietary antioxidants, and among these, chlorogenic acid (CGA) accumulates to high levels in some crop plants. CGA acts as an antioxidant in plants and protects against degenerative, age-related diseases in animals when supplied in their diet. cDNA clones encoding the enzyme that synthesizes CGA, hydroxycinnamoyl-CoA quinate: hydroxycinnamoyl transferase (HQT), were characterized from tomato and tobacco. Gene silencing proved HQT to be the principal route for accumulation of CGA in solanaceous species. Overexpression of HQT in tomato caused plants to accumulate higher levels of CGA, with no side-effects on the levels of other soluble phenolics, and to show improved antioxidant capacity and resistance to infection by a bacterial pathogen. Tomatoes with elevated CGA levels could be used in foods with specific benefits for human health
Notes: DA - 20040603
IS - 1087-0156
LA - eng
PT - Journal Article
SB - IM

188. Nijveldt,R.J., E.van Nood, D.E.van Hoorn, P.G.Boelens, K.van Norren, and P.A.van Leeuwen. 2001. Flavonoids: a review of probable mechanisms of action and potential applications. Am. J Clin Nutr. 74:418-425.
Ref ID: 326
Keywords: adverse effects/Antioxidants/Beverages/Flavonoids/Food/Fruit/Health/Human/mortality/Netherlands/pharmacokinetics/Support,Non-U.S.Gov't/Tea/therapeutic use/Vegetables/Wine
Reprint: Not in File

Abstract: The aim of this review, a summary of the putative biological actions of flavonoids, was to obtain a further understanding of the reported beneficial health effects of these substances. Flavonoids occur naturally in fruit, vegetables, and beverages such as tea and wine. Research in the field of flavonoids has increased since the discovery of the French paradox,ie, the low cardiovascular mortality rate observed in Mediterranean populations in association with red wine consumption and a high saturated fat intake. Several other potential beneficial properties of flavonoids have since been ascertained.We review the different groups of known flavonoids, the probable mechanisms by which they act, and the potential clinical applications of these fascinating natural substances
Notes: DA - 20010921
IS - 0002-9165
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
SB - AIM
SB - IM

189. Noctor,G., S.Veljovic-Jovanovic, and C.H.Foyer. 2000. Peroxide processing in photosynthesis: antioxidant coupling and redox signalling. Philos. Trans. R. Soc. Lond B Biol Sci 355:1465-1475.
Ref ID: 736
Keywords: antioxidant/Antioxidants/Ascorbic Acid/Chloroplasts/Cytosol/Glutathione/Hydrogen Peroxide/metabolism/Oxidation-Reduction/Peroxidase/Peroxidases/Photosynthesis/physiology/Plants/Signal Transduction
Reprint: Not in File
Abstract: Photosynthesis has a high capacity for production of hydrogen peroxide (H2O2), but the intracellular levels of this relatively weak oxidant are controlled by the antioxidant system, comprising a network of enzymatic and non-enzymatic components that notably includes reactions linked to the intracellular ascorbate and glutathione pools. Mutants and transformed plants with specific decreases in key components offer the opp ortunity to dissect the complex system that maintains redox homeostasis. Since H2O2 is a signal-transducing molecule relaying information on intracellular redox state, the pool size must be rigorously controlled within each compartment of the cell. This review focuses on compartment-specific differences in the stringency of redox coupling between ascorbate and glutathione, and the significance this may have for the flexibility of the control of gene expression that is linked to photosynthetic H2O2 production
Notes: DA - 20001220
IS - 0962-8436
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 50-81-7 (Ascorbic Acid)
RN - 70-18-8 (Glutathione)
RN - 7722-84-1 (Hydrogen Peroxide)
RN - EC 1.11.1. (Peroxidases)
RN - EC 1.11.1.- (APX3 protein, Arabidopsis)
SB - IM

190. Norbaek,R., D.B.Aaboer, I.S.Bleeg, B.T.Christensen, T.Kondo, and K.Brandt. 2003. Flavone C-glycoside, phenolic acid, and nitrogen contents in leaves of barley subject to organic fertilization treatments. J Agric Food Chem. 51:809-813.
Ref ID: 740

Keywords:
analysis/chemistry/Denmark/Fertilizers/flavonoid/Flavonoids/Glucosides/Glycosides/Hordeum/Hydroxybenzoic Acids/Magnetic Resonance Spectroscopy/Monosaccharides/Nitrogen/organic/Plant Leaves/Spectrometry,Mass,Matrix-Assisted Laser Desorption-Ionization
Reprint: Not in File
Abstract: From the leaves of barley, Hordeum vulgare, one new flavone C-glucoside and three known flavone glucosides were isolated and characterized by (1)H and (13)C NMR and MALDI-TOF-MS. The novel flavone C-glucoside was isovitexin 7-O-beta-[6' "-O-(E)-p-coumaroyl]glucoside (6' "-coumaroylsaponarin), and the known compounds were isovitexin 7-O-beta-[6' "-O-(E)-feruloyl]glucoside, isoorientin 7-O-beta-[6' "-O-(E)-feruloyl]glucoside, and tricin 7-O-beta-glucoside. The sum of all the flavone glycosides and soluble phenolic acids in the leaves decreased with increased rate of plant nutrients given in animal manure and with increased crop yield. All of the major phenylpropanoids showed the same general response to nutrient level. The concentration of nitrogen in the leaves was not directly related to nutrient application or to contents of phenylpropanoids
Notes: DA - 20030122
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (C-glycoside)
RN - 0 (Fertilizers)
RN - 0 (Flavonoids)
RN - 0 (Hydroxybenzoic Acids)
RN - 0 (Monosaccharides)
RN - 29656-58-4 (phenolic acid)
RN - 7727-37-9 (Nitrogen)
SB - IM

191. Noroozi,M., J.Burns, A.Crozier, I.E.Kelly, and M.E.Lean. 2000. Prediction of dietary flavonol consumption from fasting plasma concentration or urinary excretion. Eur. J Clin Nutr. 54:143-149.
Ref ID: 471
Keywords: administration & dosage/Aged/Angiosperms/blood/Body Mass Index/Cross-Over Studies/Diabetes Mellitus/Diet/Fasting/Female/Flavonoids/Flavonols/Food Habits/Health/Human/Lycopersicon esculentum/Male/Middle Aged/Onions/Quercetin/Regression Analysis/Support,Non-U.S.Gov't/Tea/urine
Reprint: Not in File
Abstract: OBJECTIVES: to predict flavonols content of the habitual diets of free-living subjects from urine and plasma concentrations of flavonols. DESIGN: Ten type 2 diabetic patients (five male, five female), mean age 60 (s.e.m. 7) y and BMI 30.2 (s.e.m. 3.5) kg/m2 were treated in a random crossover design for a 2 week period on either a low flavonoid diet or on the same diet supplemented at one of two high flavonols levels (total 77.3 or 110.4 mg/day) provided by supplements of 1500 ml tea daily and 400 g fried white onion in olive oil with and without tomato ketchup and herbs. SETTING: Glasgow Royal Infirmary, University of Glasgow, Scotland. MAIN OUTCOME MEASURES: Fasting plasma concentration, urine concentration and 24 h excretion of quercetin, isorhamnetin, kaempferol and myricetin. RESULTS: Plasma flavonol concentration (r=0.750, P=0.001), 24 h urine concentration (r=0.847, P=0.001) and 24 h urine excretion (r=0.728, P=<0.001) were all highly significantly related to dietary intake and gave similar estimates of intakes. Fasting plasma flavonols concentrations on habitual diets ranged from 0 to 43.7 ng/ml mean. Regression equations were constricted: total flavonols intake r=0.74, P<0.001 and quercetin intake r=0.744, P<0. 001. From these equations, flavonol intakes from habitual diets were estimated at 17-50, mean 35 mg/day. Of this, 91% was from quercetin. CONCLUSIONS: Dietary flavonols are absorbed and appear in plasma and urine as potential biomarkers in concentrations related quantitatively to intake. Estimation of dietary intake from plasma or urine concentrations appears possible. Sponsorship: Rank Prize Funds and Rank Foundation of the Department of Human Nutrition;

Ministry of Health and Medical Education, IR Iran. European Journal of Clinical Nutrition (2000) 54, 143-149
Notes: DA - 20000331
IS - 0954-3007
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 117-39-5 (Quercetin)
SB - IM

192. Oliveira,C., A.C.Silva Ferreira, P.M.Mendes, T.Hogg, F.Alves, and d.P.Guedes. 2003. Carotenoid compounds in grapes and their relationship to plant water status. J Agric Food Chem. 51:5967-5971.
Ref ID: 18
Keywords: Agriculture/analysis/beta Carotene/Carotenoids/chemistry/comparison/Fruit/growth & development/methods/Plant Leaves/Plants/Soil/Support,Non-U.S.Gov't/Time/Vitis/Water
Reprint: Not in File
Abstract: The aim of this work was to study the relationship between carotenoid contents in grapevine berries and plant water status. For this purpose, a black grapevine variety, Vitis vinifera L. cv. Touriga Nacional, was studied. The experiments were carried out in the same Douro vineyards, with plants of the same age, in two different water retention soils. A higher water retention capacity soil, soil A, and a lower water retention capacity soil, soil B, were both in a 1.2 m deep silt-loam schist-derived soil. The training system was the double cordon trained and spur pruned. A first range was nonirrigated (NI) and a second one was irrigated (I), 60% of evapotranspiration (ET(0)). For soil B, a 30% of ET(0) treatment was also applied. The plant water status was estimated by predawn leaf water potential. The effects of plant water status on berry growth were studied by measurement of the berry weight and total soluble solids (degrees Brix). The carotenoid profile was quantitatively determined by high-performance liquid chromatography/diode array. Carotenoids determined were beta-carotene, lutein, neoxanthin, violaxanthin, and luteoxanthin. The comparison between irrigated and nonirrigated grapes was followed from 2 weeks before veraison until the ripe stage. Results showed that at harvest time, berries exposed to the NI had a lower weight than those exposed to the irrigated treatment (60% of ET(0)), 0.89 vs 1.36 g/berry and 0.94 vs 1.34 g/berry, for soils A and B, respectively. The irrigated treatment contributed to a higher sugar concentration in both soils. However, depending on the soil water retention capacity, the carotenoid contents were different in soils A and B. For soil A, the total carotenoid content was similar for both NI and I treatments. However, with regard to soil B, in irrigated treatment, levels of carotenoids were approximately 60% lower than those found for the NI. It seems to be possible to produce higher weight berries (with higher sugar levels) with similar carotenoid contents. On the other hand, soil characteristics had a larger influence than irrigation on the concentration of carotenoids in grapes, resulting in an important viticultural parameter to take into account in aroma precursor formation
Notes: DA - 20030917
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 36-88-4 (Carotenoids)
RN - 7732-18-5 (Water)
SB - IM

193. Pearson,H. 2004. The genetics of risk. Nature 429:147.
Ref ID: 656

Keywords: CVD/genetics/Risk
Reprint: In File

194. Pillow,P.C., C.M.Duphorne, S.Chang, J.H.Contois, S.S.Strom, M.R.Spitz, and S.D.Hursting. 1999. Development of a database for assessing dietary phytoestrogen intake. Nutr. Cancer 33:3-19.
Ref ID: 508
Keywords: administration & dosage/analysis/Anticarcinogenic Agents/Databases,Factual/Diet Records/epidemiology/Estrogens,Non-Steroidal/Flavonoids/Food/Fruit/Health/Human/Isoflavones/Lignans/Neoplasms/Nutrition Assessment/Plant Preparations/prevention & control/Prostate/Questionnaires/Risk/Software Design/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./Vegetables
Reprint: Not in File
Abstract: For the past two decades, epidemiologists have observed lower risks of lung, breast, prostate, colon, and other cancers in populations that frequently consume fruits and vegetables. Numerous phytoestrogens have been shown to be anticarcinogenic under experimental conditions and may account for at least part of the cancer-prevention effects of fruit and vegetable consumption. These plant constituents include isoflavonoids, coumestans, lignans, phytosterols, and flavonoids. DietSys, the nutrient analysis program associated with the National Cancer Institute Health Habits and History Questionnaire (HHHQ), and other nationally available nutrient analysis databases do not fully assess these constituents. Therefore, we modified DietSys to include these components in foods on the basis of published values. In addition, as part of an epidemiological study of prostate cancer, we modified the food-frequency component of the HHHQ to include the main foods contributing to phytoestrogen intake. Although there are limitations to the consistency and quality of many of the values because they were gathered from a variety of sources, our approach should provide a useful first tool for assessing the epidemiological association between phytoestrogen consumption and cancer risk. Furthermore, this work has already facilitated the identification of the major dietary contributors with phytoestrogen activity and prioritized future laboratory analyses of specific foods toward the development of a more complete and accurate database
Notes: DA - 19990716
IS - 0163-5581
LA - eng
PT - Journal Article
RN - 0 (Anticarcinogenic Agents)
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

195. Prior,R.L., D.Huang, L.Gu, X.Wu, M.Bacchiocca, L.Howard, H.Hoang, M.Hampsch-Woodill, O.Boxin, and R.Jacob. 2003. Assays for Hydrophilic and Lipophilic Antioxidant Capacity (oxygen radical absorbance capacity ($ORAC_{FL}$) of Plasma and Other Biological and Food Samples . J Agric Food Chem. 51:3273-3279.
Ref ID: 644
Keywords: analysis/antioxidant/Antioxidants/Ethanol/Food/methods/ORACFL/phenolics/antioxidant/free radical/lipophilic/hydrophilic/blueberry/fruit juices/Oxygen/Solvents/Temperature/Time/Water/Assay/Plasma
Reprint: Not in File
Abstract: Methods are described for the extraction and analysis of hydrophilic and lipophilic antioxidants, using modifications of the oxygen radical absorbing capacity ($ORAC_{FL}$) procedure. These methods provide, for the first time, the ability to obtain a measure of "total antioxidant capacity" in the protein free plasma, using the same peroxyl radical generator for both lipophilic and hydrophilic antioxidants. Separation of the lipophilic and hydrophilic antioxidant fractions from plasma was accomplished by extracting with hexane after adding water and ethanol to the plasma (hexane/plasma/ethanol/water, 4:1:2:1, v/v). Lipophilic and hydrophilic antioxidants were efficiently partitioned between hexane and aqueous solvents. Conditions for controlling temperature

effects and decreasing assay variability using fluorescein as the fluorescent probe were validated in different laboratories. Incubation (37 C for at least 30 min) of the buffer to which AAPH was dissolved was critical in decreasing assay variability. Lipophilic antioxidants represented 33.1 ± 1.5 and 38.2 ± 1.9% of the total antioxidant capacity of the protein free plasma in two independent studies of 6 and 10 subjects, respectively. Methods are described for application of the assay techniques to other types of biological and food samples.

196. Radtke,J., J.Linseisen, and G.Wolfram. 1998. [Phenolic acid intake of adults in a Bavarian subgroup of the national food consumption survey]. Z. Ernahrungswiss. 37:190-197.
Ref ID: 1852
Keywords: Acids/Acids,Carbocyclic/Adult/analysis/antioxidant/Antioxidants/Caffeic Acids/Coffee/Coronary Disease/coronary heart disease/Coumaric Acids/Diet Surveys/Disease/Ellagic Acid/English Abstract/Epidemiologic Studies/epidemiology/Female/Food/Food Composition/foods/Fruit/fruits/Germany/Heart/Human/Hydroxybenzoic Acids/In Vitro/Incidence/Male/Middle Aged/Neoplasms/Plants,Edible/prevention & control/Risk/secondary/Vegetables
Reprint: Not in File
Abstract: Phenolic acids, essentially hydroxycinnamic acids and hydroxybenzoic acids, are secondary plant products and commonly found in plant derived foodstuff. The antioxidant and anticarcinogenic properties of phenolic acids could be one of the facts to explain the inverse association between fruit and vegetable intake and the incidence of coronary heart disease and cancer, respectively, as found in epidemiologic studies. Phenolic acids are rarely listed in food composition tables and there are no dietary intake data available. Consequently, a data base containing the phenolic acid content of foods (literatur data) was built and 7-d dietary protocols of 63 women and 56 men of a Bavarian subpopulation (age 19-49 years) of the German National Food Consumption Survey (NVS) were evaluated. The average phenolic acid intake of men and women is 222 mg/d within a large range. The dominating one within all the phenolic acids is clearly caffeic acid (206 mg/d); the intake of the other phenolic acids amounts to 0.2 (gentisic acid) up to 5.2 mg/d (ellagic acid). The sum of hydroxybenzoic acids and hydroxycinnamic acids amounts to 11 mg/d and 211 mg/d, respectively. Significant sex differences are found for some of the phenolic acids. Especially, the average intake of caffeic acid of women (229 mg/d) is higher than that of men (179 mg/d) caused by the high amount of coffee consumption. The age group "25-49 years" is consuming more coffee than the age group "19-24 years" and, therefore, reveals a significantly higher intake of caffeic acid. The major sources of phenolic acids are coffee with 92% of the caffeic acid intake and fruits (including fruit products and juices) with 75% of the salycilic acid and 59% of the p-coumaric acid intake. Consequently, phenolic acids are consumed in considerable amounts with food. Since antioxidant and anticarcinogenic properties of phenolic acids are already proven in in vitro as well as in animal experiments, epidemiologic studies will show whether a high phenolic acid intake goes ahead with a reduced risk for coronary heart disease or cancer in humans
Notes: DA - 19980904
IS - 0044-264X
LA - ger
PT - Journal Article
RN - 0 (Acids, Carbocyclic)
RN - 0 (Antioxidants)
RN - 0 (Caffeic Acids)
RN - 0 (Coumaric Acids)
RN - 0 (Hydroxybenzoic Acids)
SB - IM

197. Rauha,J.P., S.Remes, M.Heinonen, A.Hopia, M.Kahkonen, T.Kujala, K.Pihlaja, H.Vuorela, and P.Vuorela. 2000. Antimicrobial effects of Finnish plant extracts containing flavonoids and other phenolic compounds. Int. J Food Microbiol. 56:3-12.
Ref ID: 444
Keywords: antagonists & inhibitors/Anti-Bacterial Agents/Anti-Inflammatory Agents/Antioxidants/Calcium/chemistry/Escherichia coli/Finland/Flavonoids/Food Preservation/Health/Human/methods/Microbial Sensitivity Tests/Phenols/Plant

Extracts/Quercetin/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: Plant phenolics, especially dietary flavonoids, are currently of growing interest owing to their supposed functional properties in promoting human health. Antimicrobial screening of 13 phenolic substances and 29 extracts prepared from Finnish plant materials against selected microbes was conducted in this study. The tests were carried out using diffusion methods with four to nine microbial species (Aspergillus niger, Bacillus subtilis, Candida albicans, Escherichia coli, Micrococcus luteus, Pseudomonas aeruginosa, Saccharomyces cerevisiae, Staphylococcus aureus and Staphylococcus epidermidis). Flavone, quercetin and naringenin were effective in inhibiting the growth of the organisms. The most active plant extracts were purple loosestrife (Lythrum salicaria L.) against Candida albicans, meadowsweet (Filipendula ulmaria (L.) Maxim.), willow herb (Epilobium angustifolium L.), cloudberry (Rubus chamaemorus L.) and raspberry (Rubus idaeus L.) against bacteria, and white birch (Betula pubescens Ehrh.), pine (Pinus sylvestris L.) and potato (Solanum tuberosum. L.) against gram-positive Staphylococcus aureus
Notes: DA - 20000703
IS - 0168-1605
LA - eng
PT - Journal Article
RN - 0 (Anti-Bacterial Agents)
RN - 0 (Anti-Inflammatory Agents)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Plant Extracts)
RN - 7440-70-2 (Calcium)
SB - IM

198. Rauma,A.L., andH.Mykkanen. 2000. Antioxidant status in vegetarians versus omnivores. Nutrition 16:111-119.
Ref ID: 708
Keywords: administration & dosage/analysis/antioxidant/Antioxidants/Ascorbic Acid/beta Carotene/Biological Availability/blood/Cereals/Copper/Diet/Diet,Vegetarian/Finland/Food/Fruit/Human/Nutritional Status/Nuts/Selenium/Soil/Vegetables/Vitamin C/Vitamin E/Vitamins/Zinc
Reprint: Not in File
Abstract: Every day, vegetarians consume many carbohydrate-rich plant foods such as fruits and vegetables, cereals, pulses, and nuts. As a consequence, their diet contains more antioxidant vitamins (vitamin C, vitamin E, and beta-carotene) and copper than that of omnivores. Intake of zinc is generally comparable to that by omnivores. However, the bioavailability of zinc in vegetarian diets is generally lower than that of omnivores. Dietary intake of selenium is variable in both groups and depends on the selenium content of the soil. Measurements of antioxidant body levels in vegetarians show that a vegetarian diet maintains higher antioxidant vitamin status (vitamin C, vitamin E, beta-carotene) but variable antioxidant trace element status as compared with an omnivorous diet. To evaluate the antioxidative potential of a vegetarian diet versus an omnivorous diet, more studies are needed in which the total antioxidant capacity is determined rather than the status of a single antioxidant nutrient
Notes: DA - 20000331
IS - 0899-9007
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 1406-18-4 (Vitamin E)
RN - 50-81-7 (Ascorbic Acid)
RN - 7235-40-7 (beta Carotene)

RN - 7440-50-8 (Copper)
RN - 7440-66-6 (Zinc)
RN - 7782-49-2 (Selenium)
SB - IM

199. Re,R., P.M.Bramley, and C.Rice-Evans. 2002. Effects of food processing on flavonoids and lycopene status in a Mediterranean tomato variety. Free Radic. Res 36:803-810.
Ref ID: 97
Keywords: analysis/antioxidant/Antioxidants/Carotenoids/Chlorogenic Acid/Chromatography,High Pressure Liquid/Disease/flavonoid/Flavonoids/Food/Food Handling/Fruit/London/lycopene/Lycopersicon esculentum/metabolism/methods/phenolics/Research/Support,Non-U.S.Gov't/Temperature/Tomato
Reprint: Not in File
Abstract: This research is focused on the antioxidant properties of dietary components, in particular phenolics and carotenoids and the assessment of the contribution of the combined antioxidants to the total antioxidant activity (TAA) of tomato fruit. The aim of this study was to analyse the effects of processing on the antioxidant properties of tomato. The effects of three different methods of processing fresh tomatoes into tomato sauce were investigated with respect to the antioxidant properties of the fruit. Identification and quantification of the main carotenoids and flavonoids present in tomatoes was achieved by HPLC analysis and the effect on the concentration and availability of these compounds was investigated at different stages of the processing. The processing affected mainly naringenin causing a reduction in the concentration. Conversely, levels of chlorogenic acid were increased suggesting an improvement in availability of this compound to extraction. The concentration of all-trans-lycopene was also increased following processing. Less than 10% isomerisation of all-trans-lycopene to the cis form was detected for all the methods analysed. The effects of processing on the overall antioxidant activity support the theory of a general improvement in availability of individual antioxidants. For both hydrophilic and lipophilic extracts TAA values were increased
Notes: DA - 20020815
IS - 1071-5762
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 36-88-4 (Carotenoids)
RN - 502-65-8 (lycopene)
SB - IM

200. Reed,J. 2002. Cranberry flavonoids, atherosclerosis and cardiovascular health. Crit Rev Food Sci Nutr. 42:301-316.
Ref ID: 251
Keywords: Anthocyanins/Antioxidants/Arteriosclerosis/Beverages/Cardiovascular Diseases/Cholesterol/drug effects/drug therapy/etiology/Flavonoids/Flavonols/Health/Heart/Human/Lipid Peroxidation/Lipoproteins,LDL/Macrophages/metabolism/mortality/Oxidation-Reduction/pharmacokinetics/pharmacology/physiology/Phytotherapy/Platelet Aggregation/prevention & control/Proanthocyanidins/Risk/therapeutic use/Thrombosis/Vaccinium macrocarpon/Vasodilation
Reprint: Not in File
Abstract: Atherosclerosis is the deposition of plaques containing cholesterol and lipids in arterial walls. Atherosclerosis causes cardiovascular disease that lead to heart attacks and stroke. Mortality from these diseases is the leading cause of death in the U.S. Atherogenisis starts with the uptake of oxidized LDL by endothelial macrophages, the accumulation of foam cells in the intima of the artery and the formation of fatty streaks. Research indicates that consumption of flavonoids in foods and beverages may decrease the risk of atherosclerosis. In vitro and in vivo

experiments with flavonoids demonstrate that flavonoids are dietary antioxidants and inhibit LDL oxidation, inhibit platelet aggregation and adhesion, inhibit enzymes involved in lipid and lipoprotein metabolism that affect the immune response to oxidized LDL and their uptake by endothelial macrophages, may induce endothelium-dependent vassorelaxation, and may increase reverse cholesterol transport and decrease total and LDL cholesterol. Cranberries contain both hydroxycinnamic acids and flavonoids. The cranberry flavonoids belong to three groups: anthocyanins, flavonols, and proanthocyanidins. This article reviews the literature on the effects of flavonoids on atherosclerosis with an emphasis on the potential effects of the flavonols and proanthocyanidins in cranberries
Notes: DA - 20020612
IS - 1040-8398
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Lipoproteins, LDL)
RN - 57-88-5 (Cholesterol)
SB - IM

201. Reganold,J.P. 2004. Comparison of soil properties as influenced by organic and conventional farming systems. American Journal of Alternative Agriculture 3:144-155.
Ref ID: 367
Keywords: comparison/conventional/Farming/farming systems/organic/Soil
Reprint: In File

202. Reinli,K., andG.Block. 1996. Phytoestrogen content of foods -- a compenduim of literature values. Nutrition and Cancer 26:123-148.
Ref ID: 652
Keywords: Food/phytoestrogens/soy
Reprint: Not in File

203. Ren H., H.Endo, and T.Hayashi. 2001. Antioxidative and antimutagenic activities and polyphenol content of pesticide-free and organically cultivated green vegetables using water-soluble chitosan as a soil modifier and leaf surface spray. Journal of the Science of Food and Agriculture 81:1426-1432.
Ref ID: 660
Keywords: organic/polyphenols/Soil/Vegetables
Reprint: In File

204. Ren,H., H.Endo, and T.Hayashi. 2001. The superiority of organically cultivated vegetables to general ones regarding antimutagenic activities. Mutat Res 496:83-88.
Ref ID: 750
Keywords: Animals/Antimutagenic Agents/chemistry/classification/Comparative Study/DNA Damage/drug effects/enzymology/Food/genetics/Health Food/Japan/Microsomes,Liver/Mutagenicity Tests/Mutagens/pesticide/pharmacology/Plant Extracts/Rats/Salmonella typhimurium/Soil/Species Specificity/Spinach/Taste/toxicity/Vegetables
Reprint: Not in File
Abstract: We found organically cultivated (OC) vegetables, using a water-soluble chitosan as a soil improvement agent and leaf surface spray, had much longer shelf life and better taste than that of generally cultivated (GC) vegetables. The purpose of this study is to determine the relative antimutagenic activity between OC and GC vegetables. Eleven OC vegetables were harvested in March and April in 1999 and 2000, and GC ones were supplied as a control from nearby farms on the same date. The former vegetables were planted on the field where no pesticide had been used for the last 3 years. Forward mutation test with Salmonella

typhimurium TM677 and 8-azaguanine as a detection agent was used to determine the antimutagenic activity of juices prepared from OC and GC vegetables against authentic mutagens, such as 4-nitroquinoline oxide (4NQO), benzo(a)pyrene (BaP), and 3-amino-1-methyl-5H-pyrido[4,3-b]indole acetate (Trp-P-2). This microbiological test is a convenient method to use for the food samples containing free histidine. Antimutagenic activity was evaluated by the difference of mutagenic activities between mutagenecity of authentic compounds and that observed upon incubation at 37 degrees C for 2h with each vegetable juice. OC Chinese cabbage, carrot, Welsh onion, and Qing-gen-cai suppressed 37-93% of the mutagenic activity of 4NQO, while the GC ones were held down to 11-65%. Against BaP, three species of OC vegetables showed 30-57% antimutagenecity, while GC ones did only 5-30%. Similarly, the OC spinach decreased the activity of Trp-P-2 to 78%, and the GC suppressed it by 49%
Notes: DA - 20010911
IS - 0027-5107
LA - eng
PT - Journal Article
RN - 0 (Antimutagenic Agents)
RN - 0 (Mutagens)
RN - 0 (Plant Extracts)
SB - IM

205. Rice-Evans,C.A., N.J.Miller, and G.Paganga. 1996. Structure-antioxidant activity relationships of flavonoids and phenolic acids. Free Radic. Biol Med 20:933-956.
Ref ID: 599
Keywords: chemistry/Comparative Study/Diet/Fatty Acids/Flavonoids/Free Radical Scavengers/Health/Hydroxybenzoic Acids/London/Molecular Structure/pharmacology/Plants/Spectrophotometry/Spectrophotometry,Ultraviolet/Structure-Activity Relationship/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: The recent explosion of interest in the bioactivity of the flavonoids of higher plants is due, at least in part, to the potential health benefits of these polyphenolic components of major dietary constituents. This review article discusses the biological properties of the flavonoids and focuses on the relationship between their antioxidant activity, as hydrogen donating free radical scavengers, and their chemical structures. This culminates in a proposed hierarchy of antioxidant activity in the aqueous phase. The cumulative findings concerning structure-antioxidant activity relationships in the lipophilic phase derive from studies on fatty acids, liposomes, and low-density lipoproteins; the factors underlying the influence of the different classes of polyphenols in enhancing their resistance to oxidation are discussed and support the contention that the partition coefficients of the flavonoids as well as their rates of reaction with the relevant radicals define the antioxidant activities in the lipophilic phase
Notes: DA - 19970211
IS - 0891-5849
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Free Radical Scavengers)
RN - 0 (Hydroxybenzoic Acids)
SB - IM

206. Rimm,E.B., M.B.Katan, A.Ascherio, M.J.Stampfer, and W.C.Willett. 1996. Relation between intake of flavonoids and risk for coronary heart disease in male health professionals. Ann. Intern. Med 125:384-389.
Ref ID: 587
Keywords: administration & dosage/Adult/Aged/Cohort Studies/Diet/epidemiology/Flavonoids/Flavonols/Follow-Up Studies/Fruit/Health/Heart/Human/Hypercholesterolemia/Incidence/Male/Middle Aged/mortality/Myocardial Infarction/Obesity/Questionnaires/Risk/Risk

Factors/Smoking/Tea/United States/Vegetables/Vitamin E/Wine
Reprint: Not in File
Abstract: OBJECTIVE: Flavonols and flavones are subgroups of flavonoids and are found in tea, vegetables, fruits, and red wine. Because they have antioxidant properties, we investigated whether intake of these dietary compounds is associated with a lower risk for fatal and nonfatal coronary heart disease. DESIGN: Prospective cohort study. SETTING: United States. PATIENTS: 34,789 male health professionals, 40 to 75 years of age, who responded to a questionnaire in 1986. MEASUREMENTS: In 1986 and 1990, detailed, 131-item questionnaires were used to assess dietary intake of flavonols and flavones. RESULTS: Between 1986 and 1992, 496 patients received a new diagnosis of nonfatal myocardial infarction. The relative risk for nonfatal myocardial infarction was 1.08 (95% Cl, 0.81 to 1.43) for the highest (median, 40.0 mg/d) compared with the lowest (median, 7.1 mg/d) quintiles for intake of flavonols and flavones after adjustment for age, obesity, smoking, intake of vitamin E, intake of alcohol, diabetes, hypertension, hypercholesterolemia, and family history of coronary heart disease. Among the 4814 men who reported that they had previously had coronary heart disease, we found a modest but nonsignificant inverse association between intake of flavonols and flavones and subsequent coronary mortality rates (relative risk, 0.63 [Cl, 0.33 to 1.20] for the highest compared with the lowest quintile for intake of flavonoids). CONCLUSION: The data do not support a strong inverse association between intake of flavonoids and total coronary heart disease, but they do not exclude the possibility that flavonoids have a protective effect in men with established coronary heart disease
Notes: DA - 19960905
IS - 0003-4819
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
SB - AIM
SB - IM

207. Rissanen,T.H., S.Voutilainen, J.K.Virtanen, B.Venho, M.Vanharanta, J.Mursu, and J.T.Salonen. 2003. Low intake of fruits, berries and vegetables is associated with excess mortality in men: the Kuopio Ischaemic Heart Disease Risk Factor (KIHD) Study. J Nutr. 133:199-204.
Ref ID: 759
Keywords: Adult/Aged/Chronic Disease/Coronary Disease/CVD/Diet/Disease/epidemiology/etiology/Finland/Food/Fruit/Health/Heart/Human/Incidence/Male/Middle Aged/mortality/Prospective Studies/Registries/Research/Risk/Risk Factors/Support,Non-U.S.Gov't/Time/Vegetables
Reprint: Not in File
Abstract: Diets rich in fruits and vegetables have been of interest because of their potential health benefits against chronic diseases such as cardiovascular disease (CVD) and cancer. The aim of this work was to assess the association of the dietary intake of a food group that includes fruits, berries and vegetables with all-cause, CVD-related and non-CVD-related mortality. The subjects were Finnish men aged 42-60 y examined in 1984-1989 in the prospective Kuopio Ischaemic Heart Disease Risk Factor (KIHD) Study. Dietary intakes were assessed by 4-d food intake record during the baseline phase of the KIHD Study. The risk of all-cause and non-CVD-related deaths was studied in 2641 men and the risk of CVD-related death in 1950 men who had no history of CVD at baseline. During a mean follow-up time of 12.8 y, cardiovascular as well as noncardiovascular and all-cause mortality were lower among men with the highest consumption of fruits, berries and vegetables. After adjustment for the major CVD risk factors, the relative risk for men in the highest fifth of fruit, berry and vegetable intake for all-cause death, CVD-related and non-CVD-related death was 0.66 [95% confidence interval (CI) 0.50-0.88], 0.59 (0.33-1.06), and 0.68 (0.46-1.00), respectively, compared with men in the lowest fifth. These data show that a high fruit, berry and vegetable intake is associated with reduced risk of mortality in middle-aged Finnish men. Consequently, the findings of this work indicate that diets that are rich in plant-derived foods can promote longevity

Notes: DA - 20030106
IS - 0022-3166
LA - eng
PT - Journal Article
SB - IM

208. Roberts,W.G., andM.H.Gordon. 2003. Determination of the total antioxidant activity of fruits and vegetables by a liposome assay. J Agric Food Chem. 51:1486-1493.
Ref ID: 745
Keywords: alpha-Tocopherol/analysis/antioxidant/Antioxidants/Ascorbic Acid/beta Carotene/chemistry/Chromatography,High Pressure Liquid/Drug Synergism/Food/Fruit/Human/Lipids/Liposomes/Nutrition/Oxidation-Reduction/pharmacology/Phenols/Phospholipids/Solubility/Support,Non-U.S.Gov't/Vegetables/Water
Reprint: Not in File
Abstract: The effects of mixtures of antioxidants on the oxidation of phospholipids have been investigated in large unilamellar liposomes following initiation by 2,2'-azobis(2-aminopropane) dihydrochloride. The lag phase increased linearly with antioxidant concentration. The lag phases of mixtures containing alpha-tocopherol with ascorbic acid showed synergy between the antioxidants, but mixtures of beta-carotene with alpha-tocopherol or ascorbic acid were not synergistic. The liposome system was used to investigate the total antioxidant activity of lipid- and water-soluble extracts from 16 samples of fruits, vegetables, and related food products. The water-soluble extracts caused greater increases in lag phase than the lipid-soluble extracts. The lag phase of liposomes containing the water-soluble extracts from fruits and vegetables increased linearly with the total phenolic concentration, with the continental salad extract having the longest lag phase. The lipid-soluble extract from apples caused the largest increase in lag phase of the lipid-soluble extracts. The lag phases of the lipid-soluble and water-soluble extracts of all fruits and vegetables studied were additive, but no synergy was detected. The lag phase of the liposomes containing both the water-soluble and lipid-soluble extracts varied from 611.5 min for the continental salad extracts to 47.5 min for the cauliflower extracts
Notes: DA - 20030219
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Lipids)
RN - 0 (Liposomes)
RN - 0 (Phenols)
RN - 0 (Phospholipids)
RN - 50-81-7 (Ascorbic Acid)
RN - 59-02-9 (alpha-Tocopherol)
RN - 7235-40-7 (beta Carotene)
RN - 7732-18-5 (Water)
SB - IM

209. Romero,C., M.Brenes, K.Yousfi, P.Garcia, A.Garcia, and A.Garrido. 2004. Effect of cultivar and processing method on the contents of polyphenols in table olives. J Agric Food Chem. 52:479-484.
Ref ID: 14
Keywords: analogs & derivatives/analysis/antioxidant/Antioxidants/chemistry/Chromatography,High Pressure Liquid/Color/cultivars/flavonoid/Flavonoids/Food/Food Handling/Fruit/Lignans/methods/Olea/Oxidation-Reduction/Phenols/Phenylethyl Alcohol/polyphenols/Spain/Species Specificity/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: Polyphenols were determined by HPLC in the juice and oil of packed table olives. The phenolic compositions of the two phases were very different, hydroxytyrosol and tyrosol

being the main polyphenols in olive juice and tyrosol acetate, hydroxtyrosol acetate, hydroxytyrosol, tyrosol, and lignans (1-acetoxypinoresinol and pinoresinol) in oil. The type of processing had a marked influence on the concentration of polyphenols in olive juice and little on the content in oil. The analyses carried out on 48 samples showed that turning color olives in brine had the highest concentration in polyphenols (approximately 1200 mg/kg), whereas oxidized olives had the lowest (approximately 200 mg/kg). Among olive cultivars, Manzanilla had a higher concentration than Hojiblanca and Gordal. The type of olive presentation also influenced the concentration of polyphenols in olives, decreasing in the order plain > pitted > stuffed. The results obtained in this work indicate that table olives can be considered a good source of phenolic antioxidants, although their concentration depends on olive cultivar and processing method
Notes: DA - 20040204
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (polyphenols)
RN - 10597-60-1 (3,4-dihydroxyphenylethanol)
RN - 501-94-0 (4-hydroxyphenylethanol)
RN - 60-12-8 (Phenylethyl Alcohol)
SB - IM

210. Sakakibara,H., Y.Honda, S.Nakagawa, H.Ashida, and K.Kanazawa. 2003. Simultaneous determination of all polyphenols in vegetables, fruits, and teas. J Agric Food Chem. 51:571-581.
Ref ID: 175
Keywords: analysis/Anthocyanins/Catechin/Chalcone/chemistry/Chromatography,High Pressure Liquid/Flavonoids/Flavonols/Freeze Drying/Fruit/Glycosides/Hydrolysis/Isoflavones/Methanol/methods/Phenols/Plant Leaves/Polymers/Reproducibility of Results/Tea/Vegetables
Reprint: Not in File
Abstract: Polyphenols, which have beneficial effects on health and occur ubiquitously in plant foods, are extremely diverse. We developed a method for simultaneously determining all the polyphenols in foodstuffs, using HPLC and a photodiode array to construct a library comprising retention times, spectra of aglycons, and respective calibration curves for 100 standard chemicals. The food was homogenized in liquid nitrogen, lyophilized, extracted with 90% methanol, and subjected to HPLC without hydrolysis. The recovery was 68-92%, and the variation in reproducibility ranged between 1 and 9%. The HPLC eluted polyphenols with good resolution within 95 min in the following order: simple polyphenols, catechins, anthocyanins, glycosides of flavones, flavonols, isoflavones and flavanones, their aglycons, anthraquinones, chalcones, and theaflavins. All the polyphenols in 63 vegetables, fruits, and teas were then examined in terms of content and class. The present method offers accuracy by avoiding the decomposition of polyphenols during hydrolysis, the ability to determine aglycons separately from glycosides, and information on simple polyphenol levels simultaneously
Notes: DA - 20030122
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 67-56-1 (Methanol)
SB - IM

211. Sampson,L., E.Rimm, P.C.Hollman, J.H.de Vries, and M.B.Katan. 2002. Flavonol and flavone intakes in US health professionals. J Am. Diet. Assoc. 102:1414-1420.
Ref ID: 201

Keywords: administration & dosage/Adult/Aged/Antioxidants/beta Carotene/chemistry/Chronic Disease/Diet Surveys/Female/Flavonoids/Flavonols/Food Analysis/Fruit/Health/Heart/Human/Kaempferols/Male/Middle Aged/Onions/Quercetin/Questionnaires/Tea/United States/Vegetables
Reprint: Not in File
Abstract: OBJECTIVE: To determine flavonoid content of US foods, mean individual intakes, major food sources, and associations with other nutrients. SUBJECTS: US men (n = 37,886) and women (n = 78,886) who completed a semiquantitative food frequency questionnaire in 1990. DESIGN: Men and women completed a questionnaire that listed 132 items, including onions as a garnish and as a vegetable, rings, or soup. Foods known to be important sources of flavonols (quercetin, myricetin, and kaempferol) and flavones (luteolin and apigenin) were analyzed biochemically. The database contained values from the analyzed foods, previously published values from Dutch foods, and imputed values. STATISTICS: Means and standard deviations, contributions of foods to summed intake of each flavonoid, and Pearson correlation coefficients were calculated. RESULTS: Of the flavonols and flavones studied, quercetin contributed 73% in women and 76% in men. The mean flavonol and flavone intake was approximately 20 to 22 mg per day. Onions, tea, and apples contained the highest amounts of flavonols and flavones. Correlations between the intakes of flavonols and flavones and intakes of beta carotene, vitamin E, vitamin C, folic acid, and dietary fiber did not exceed 0.35. CONCLUSION: Although flavonols and flavones are subgroups of flavonoids hypothesized to be associated with reduced risk of coronary heart disease, data on flavonoid intake has been limited due to the lack of food composition data. Nutrition professionals can use these and other published data to estimate intake of flavonoids in their populations. This work should facilitate the investigation of this class of dietary antioxidants as a contributor to disease prevention
Notes: DA - 20021024
IS - 0002-8223
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Kaempferols)
RN - 117-39-5 (Quercetin)
RN - 491-70-3 (luteolin)
RN - 520-18-3 (kaempferol)
RN - 520-36-5 (apigenin)
RN - 529-44-2 (myricetin)
SB - AIM
SB - IM

212. Sanchez-Moreno,C. 2002. Review: Methods Used to Evaluate the Free Radical Scavenging Activity in Foods and Biological Systems. Food Sci Tech Int 8:121-137.
Ref ID: 670
Keywords: Food/methods/ORAC
Reprint: In File

213. Sanchez,A.C.G., A.Gil-Izquierdo, and M.I.Gil. 2003. Comparative study of six pear cultivars in terms of their phenolic and vitamin C contents and antioxidant capactiy. J Sci Food Agric 83:995-1003.
Ref ID: 699
Keywords: antioxidant/Comparative Study/cultivars/Vitamin C
Reprint: In File

214. Scalbert,A., andG.Williamson. 2000. Dietary intake and bioavailability of polyphenols. J Nutr. 130:2073S-2085S.
Ref ID: 751
Keywords: Absorption/Acids/administration &

dosage/analysis/Animals/Anthocyanins/Beverages/Biological Availability/Catechin/Cereals/classification/Diet/flavanols/flavonoid/Flavonoids/Food/Food Analysis/France/Fruit/Glycosides/Human/Intestinal Absorption/metabolism/pharmacokinetics/Phenols/Polymers/polyphenols/Proanthocyanidins/Tea/Vegetables/Wine
Reprint: Not in File
Abstract: The main dietary sources of polyphenols are reviewed, and the daily intake is calculated for a given diet containing some common fruits, vegetables and beverages. Phenolic acids account for about one third of the total intake and flavonoids account for the remaining two thirds. The most abundant flavonoids in the diet are flavanols (catechins plus proanthocyanidins), anthocyanins and their oxidation products. The main polyphenol dietary sources are fruit and beverages (fruit juice, wine, tea, coffee, chocolate and beer) and, to a lesser extent vegetables, dry legumes and cereals. The total intake is approximately 1 g/d. Large uncertainties remain due to the lack of comprehensive data on the content of some of the main polyphenol classes in food. Bioavailability studies in humans are discussed. The maximum concentration in plasma rarely exceeds 1 microM after the consumption of 10-100 mg of a single phenolic compound. However, the total plasma phenol concentration is probably higher due to the presence of metabolites formed in the body's tissues or by the colonic microflora. These metabolites are still largely unknown and not accounted for. Both chemical and biochemical factors that affect the absorption and metabolism of polyphenols are reviewed, with particular emphasis on flavonoid glycosides. A better understanding of these factors is essential to explain the large variations in bioavailability observed among polyphenols and among individuals
Notes: DA - 20000907
IS - 0022-3166
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
SB - IM

215. Schmitz-Drager,B.J., M.Eichholzer, B.Beiche, and T.Ebert. 2001. Nutrition and prostate cancer. Urol. Int. 67:1-11.
Ref ID: 342
Keywords: Carotenoids/Case-Control Studies/Cohort Studies/Diet/Dietary Fats/Estrogens,Non-Steroidal/etiology/Health/Human/Incidence/Isoflavones/Male/Plant Preparations/prevention & control/Prostate/Prostatic Neoplasms/Risk/Selenium/Vitamins
Reprint: Not in File
Abstract: Nutrition is apparently a major risk factor for the development and progression of prostate cancer. Based on experimental studies and epidemiologic data mainly from case-control studies or cohort studies, there is strong evidence that reduction of the total energy consumption, a diet comprising less than 30% fat, and increased intake of phytoestrogens, vitamins D and E and selenium could yield a decreased prostate cancer incidence. Furthermore, some of these measures appear to have antitumoral capacity even in the presence of the disease. These observations have provided a rationale to forward large prospective trials on dietary interventions to prove the efficacy of the concept and further delineate the correlation between nutritional compounds and prostate cancer risk. These chemoprevention trials are either aiming a reduction prostate cancer incidence or a decrease in tumor progression. Depending on the study design, large numbers of individuals need to be enrolled and long follow-up intervals are required thus making such trials highly complex and cost-intensive. However, regarding the potential relevance of chemoprevention on public health, further efforts to identify nutritional factors affecting prostate cancer growth are warranted
Notes: DA - 20010720
IS - 0042-1138

LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Dietary Fats)
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (Vitamins)
RN - 0 (phytoestrogens)
RN - 36-88-4 (Carotenoids)
RN - 502-65-8 (lycopene)
RN - 7782-49-2 (Selenium)
SB - IM

216. Schramm,D.D., M.Karim, H.R.Schrader, R.R.Holt, M.Cardetti, and C.L.Keen. 2003. Honey with high levels of antioxidants can provide protection to healthy human subjects. J Agric Food Chem. 51:1732-1735.
Ref ID: 746
Keywords: Adult/Aging/antioxidant/Antioxidants/Buckwheat/Disease/Food/Free Radicals/Human/Nutrition/Oxidative Stress/Oxygen/Reactive Oxygen Species
Reprint: Not in File
Abstract: Free radicals and reactive oxygen species (ROS) have been implicated in contributing to the processes of aging and disease. Humans protect themselves from these damaging compounds, in part, by absorbing antioxidants from high-antioxidant foods. This report describes the effects of consuming 1.5 g/kg body weight of corn syrup or buckwheat honey on the antioxidant and reducing capacities of plasma in healthy human adults. The corn syrup treatment contained 0.21 +/- 0.06 mg of phenolic antioxidants per gram, and the two buckwheat honey treatments contained 0.79 +/- 0.02 and 1.71 +/- 0.21 mg of phenolic antioxidants per gram. Following consumption of the two honey treatments, plasma total-phenolic content increased ($P < 0.05$) as did plasma antioxidant and reducing capacities ($P < 0.05$). These data support the concept that phenolic antioxidants from processed honey are bioavailable, and that they increase antioxidant activity of plasma. It can be speculated that these compounds may augment defenses against oxidative stress and that they might be able to protect humans from oxidative stress. Given that the average sweetener intake by humans is estimated to be in excess of 70 kg per year, the substitution of honey in some foods for traditional sweeteners could result in an enhanced antioxidant defense system in healthy adults
Notes: DA - 20030305
IS - 0021-8561
LA - eng
PT - Journal Article
SB - IM

217. Sesso,H.D., J.E.Buring, E.P.Norkus, and J.M.Gaziano. 2004. Plasma lycopene, other carotenoids, and retinol and the risk of cardiovascular disease in women
18. Am J Clin Nutr 79:47-53.
Ref ID: 1836
Keywords: Affect/antioxidant/blood/Carotenoids/Case-Control Studies/Cholesterol/CVD/Disease/Health/In Vitro/lycopene/Middle Aged/Plasma/Prospective Studies/Risk/Smoking/Time/Women's Health
Reprint: In File
Abstract: Background: Growing evidence suggests that lycopene has significant in vitro antioxidant potential. Lycopene has rarely been tested in prospective studies for its role in cardiovascular disease (CVD) prevention. Objective: We examined the association between plasma lycopene and the risk of CVD in middle-aged and elderly women. Design: A prospective, nested, case-control study was conducted in 39 876 women initially free of CVD and cancer in the Women's Health Study. Baseline blood samples were collected from 28 345

(71%) of the women. During a mean of 4.8 y of follow-up, we identified 483 CVD cases and 483 control subjects matched by age, smoking status, and follow-up time. Plasma lycopene, other carotenoids, retinol, and total cholesterol were measured. Results: In analyses matched for age and smoking, with adjustment for plasma cholesterol, the relative risks (RRs) and 95% CIs of CVD in increasing quartiles of plasma lycopene were 1.00 (referent), 0.78 (95% CI: 0.55, 1.11), 0.56 (0.39, 0.82), and 0.62 (0.43, 0.90). In multivariate models, the RRs were 1.00 (referent), 0.94 (0.60, 1.49), 0.62 (0.39, 1.00), and 0.67 (0.41, 1.11); those in the upper compared with the lower half of plasma lycopene had an RR of 0.66 (0.47, 0.95). For CVD, exclusive of angina, women in the upper 3 quartiles had a significant multivariate 50% risk reduction compared with those in the lowest quartile. The stepwise addition of individual plasma carotenoids did not affect the RRs. Conclusions: Higher plasma lycopene concentrations are associated with a lower risk of CVD in women. These findings require confirmation in other cohorts, and the determinants of plasma lycopene concentrations need to be better understood

218. Shaheen,S.O., J.A.Sterne, R.L.Thompson, C.E.Songhurst, B.M.Margetts, and P.G.Burney. 2001. Dietary antioxidants and asthma in adults: population-based case-control study. Am. J Respir. Crit Care Med 164:1823-1828.
Ref ID: 314
Keywords: Adolescent/Adult/Aged/Antioxidants/Asthma/Bias (Epidemiology)/Case-Control Studies/classification/Confounding Factors (Epidemiology)/Diet/Diet Surveys/Energy Intake/Energy Metabolism/epidemiology/Female/Flavonoids/Health/Human/London/Male/Malus/Middle Aged/Nutrition Policy/Odds Ratio/pharmacology/Population Surveillance/prevention & control/Questionnaires/Risk Factors/Selenium/Severity of Illness Index/Support,Non-U.S.Gov't/Vitamins/Wine
Reprint: Not in File
Abstract: A protective role for dietary antioxidants in asthma has been proposed. However, epidemiological evidence to implicate antioxidant vitamins is weak, and data on the role of flavonoid-rich foods and antioxidant trace elements are lacking. We carried out a population-based case-control study in South London, UK, to investigate whether asthma is less common and less severe in adults who consume more dietary antioxidants. Participants were aged 16-50 yr and registered with 40 general practices. Asthma was defined by positive responses to a standard screening questionnaire in 1996, and complete information about usual diet was obtained by food frequency questionnaire from 607 cases and 864 controls in 1997. After controlling for potential confounding factors and total energy intake, apple consumption was negatively associated with asthma (odds ratio [OR] per increase in frequency group 0.89 [95% confidence interval [CI]: 0.82 to 0.97]; p = 0.006). Intake of selenium was also negatively associated with asthma (OR per quintile increase 0.84 [0.75 to 0.94]; p = 0.002). Red wine intake was negatively associated with asthma severity. The associations between apple and red wine consumption and asthma may indicate a protective effect of flavonoids. The findings for dietary selenium could have implications for health policy in Britain where intake has been declining
Notes: DA - 20011205
IS - 1073-449X
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 7782-49-2 (Selenium)
SB - AIM
SB - IM

219. Shamberger,R.J., S.A.Tytko, and C.E.Willis. 1976. Antioxidants and cancer. Part VI. Selenium and age-adjusted human cancer mortality. Arch. Environ. Health 31:231-235.
Ref ID: 369
Keywords: Age Factors/antioxidant/Antioxidants/chemically induced/epidemiology/Female/Human/Male/Middle Aged/mortality/Neoplasms/Selenium/Sex Factors/Soil/United States

Reprint: Not in File
Abstract: The possible epidemiologic relationship between selenium occurrence and cancer mortality was studied in cities and states located in areas with different levels of selenium bioavailability. Statistically significant differences were found in age-specific cancer death rates among states with high, medium, and low selenium levels. The death rates for specific types of cancer showed a larger difference in males than in females in the states with high selenium levels. The greater difference between males and females may be related to sex difference or to the fact that males are heavier smokers and are aslo more likely to be exposed to industrial pollution. In the states with high selenium levels, there was significantly lower mortality in both males and females from several types of cancer, particularly the environmental problem indicators, such as gastrointestinal and urogenital types of cancer
Notes: DA - 19761203
IS - 0003-9896
LA - eng
PT - Journal Article
RN - 7782-49-2 (Selenium)
SB - AIM
SB - IM

220. Shirai,N., andH.Suzuki. 2004. Effect of dietary docosahexaenoic acid and catechins on maze behavior in mice. Ann. Nutr. Metab 48:51-58.
Ref ID: 47
Keywords: administration & dosage/Adult/analysis/Animals/Brain/Brain Chemistry/Catechin/Diet/Docosahexaenoic Acids/drug effects/Drug Synergism/Fatty Acids/Human/Male/Maze Learning/metabolism/Mice/Mice,Inbred ICR/physiology/Random Allocation/Time Factors
Reprint: Not in File
Abstract: BACKGROUND/AIMS: Docosahexaenoic acid (DHA; 22:6 n-3) and catechins are food components that play an important role in maintaining human health. However, the effect of a simultaneous intake of DHA and catechins on brain function is unknown. The purpose of this study was to investigate the effect of DHA and catechins on maze behavior in mice. METHOD: Adult (5 months old) and old (15 months old) male mice were fed 5% lard diets containing 0 or 1.5% DHA ethyl ester (DHA-EE), either with or without 0.5% catechins, for 3.5 months. Maze behavior was assessed 3 months after the start of the feeding experiment. The time required and distance traveled to reach the maze exit, and the number of times that a mouse strayed into blind alleys in the maze were measured. The fatty acid compositions of plasma and brain lipids were measured after the maze behavior experiment. RESULTS: Adult mice in the catechin, DHA-EE, and DHA-EE + catechin diet groups required less time and traveled a shorter distance to reach the maze exit, and strayed into blind alleys fewer times than those in the corresponding lard groups. Among old mice, the DHA-EE + catechin diet group showed an improvement in maze behavior. No marked differences in the brain fatty acid composition between lard and catechin diet groups were observed; in the DHA-EE intake groups, the brain DHA percentage was raised. CONCLUSION: These results suggest that a simultaneous intake of DHA and catechins may certainly enhance brain function in both adult and old mice
Notes: DA - 20040220
IS - 0250-6807
LA - eng
PT - Journal Article
RN - 0 (Fatty Acids)
RN - 154-23-4 (Catechin)
RN - 25167-62-8 (Docosahexaenoic Acids)
SB - IM

221. Shoff,S.M., P.A.Newcomb, J.A.Mares-Perlman, B.E.Klein, S.M.Haffner, B.E.Storer, and R.Klein. 1998. Usual consumption of plant foods containing phytoestrogens and sex hormone levels in postmenopausal women in Wisconsin. Nutr. Cancer 30:207-212.

Ref ID: 545
Keywords: Adult/Aged/Aged,80 and over/blood/Body Mass Index/Energy Intake/Estrogens,Non-Steroidal/Female/Food/Gonadal Steroid Hormones/Human/Isoflavones/Menopause/metabolism/Middle Aged/Nutrition/pharmacology/Plant Preparations/Postmenopause/Questionnaires/Risk/Support,Non-U.S.Gov't/Support,U.S.Gov't,P.H.S./Vegetables/Wisconsin/Women's Health
Reprint: Not in File
Abstract: Consumption of phytoestrogens may reduce hormone-dependent cancer risk through alterations in the actions or metabolism of steroid hormones. Studies in humans of phytoestrogen-hormone interactions have been limited and inconsistent. Relations between the consumption of phytoestrogen-containing foods and serum sex hormones and sex hormone-binding globulin were studied in a population-based sample of postmenopausal women who participated in the Nutritional Factors in Eye Disease Study of the Beaver Dam Eye Study. Information on phytoestrogen-containing foods (broccoli, carrots, cauliflower, chili, dark bread, peas, and dried beans) was collected by interviewer-administered food-frequency questionnaires. Estrone, sex hormone-binding globulin, dehydroepiandrosterone sulfate, and total and free testosterone were measured. Analyses included 246 postmenopausal women not taking hormone replacements. Partial correlations between hormones and intake of phytoestrogen-containing foods were computed, with adjustment for age, body mass index, years since menopause, and total energy intake. Number of standard servings per week of whole-grain products from the dark bread group was inversely associated with total testosterone ($r = -0.20$, $p = 0.002$). Although not statistically significant, other hormones displayed similar inverse associations with dark bread consistent with a common metabolic pathway. Although the magnitude of association was small, the data are consistent with the possibility that consumption of some phytoestrogen-containing foods may affect levels of testosterone in postmenopausal women
Notes: DA - 19980904
IS - 0163-5581
LA - eng
PT - Journal Article
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Gonadal Steroid Hormones)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

222. Shoskes,D.A., S.I.Zeitlin, A.Shahed, and J.Rajfer. 1999. Quercetin in men with category III chronic prostatitis: a preliminary prospective, double-blind, placebo-controlled trial. Urology 54:960-963.
Ref ID: 479
Keywords: Absorption/Adult/Aged/Chronic Disease/Double-Blind Method/drug therapy/Health/Human/Male/methods/Middle Aged/Prospective Studies/Prostatitis/Quercetin/therapeutic use
Reprint: Not in File
Abstract: OBJECTIVES: The National Institutes of Health (NIH) category III chronic prostatitis syndromes (nonbacterial chronic prostatitis and prostatodynia) are common disorders with few effective therapies. Bioflavonoids have recently been shown in an open-label study to improve the symptoms of these disorders in a significant proportion of men. The aim of this study was to confirm these findings in a prospective randomized, double-blind, placebo-controlled trial. METHODS: Thirty men with category IIIa and IIIb chronic pelvic pain syndrome were randomized in a double-blind fashion to receive either placebo or the bioflavonoid quercetin 500 mg twice daily for 1 month. The NIH chronic prostatitis symptom score was used to grade symptoms and the quality-of-life impact at the start and conclusion of the study. In a follow-up unblind, open-label study, 17 additional men received 1 month of a supplement containing quercetin, as well as bromelain and papain (Prosta-O), which enhance

bioflavonoid absorption. RESULTS: Two patients in the placebo group refused to complete the study because of worsening symptoms, leaving 13 placebo and 15 bioflavonoid patients for evaluation in the blind study. Both the quercetin and placebo groups were similar in age, symptom duration, and initial symptom score. Patients taking placebo had a mean improvement in NIH symptom score from 20.2 to 18.8 (not significant), while those taking the bioflavonoid had a mean improvement from 21.0 to 13.1 (P = 0.003). Twenty percent of patients taking placebo and 67% of patients taking the bioflavonoid had an improvement of symptoms of at least 25%. In the 17 patients who received Prosta-Q in the open-label study, 82% had at least a 25% improvement in symptom score. CONCLUSIONS: Therapy with the bioflavonoid quercetin is well tolerated and provides significant symptomatic improvement in most men with chronic pelvic pain syndrome
Notes: DA - 20000127
IS - 1527-9995
LA - eng
PT - Clinical Trial
PT - Journal Article
PT - Randomized Controlled Trial
RN - 117-39-5 (Quercetin)
SB - IM

223. Skibola,C.F., andM.T.Smith. 2000. Potential health impacts of excessive flavonoid intake. Free Radic. Biol Med 29:375-383.
Ref ID: 409
Keywords: administration & dosage/adverse effects/analysis/antagonists & inhibitors/Antioxidants/biosynthesis/chemistry/Diet/Dietary Supplements/DNA Topoisomerases,Type I/Flavonoids/Free Radicals/Health/Human/metabolism/Mutagenicity Tests/Mutagens/pharmacokinetics/Plants,Edible/Risk/Support,Non-U.S.Gov't/Thyroid Hormones
Reprint: Not in File
Abstract: Plant flavonoids are common dietary components that have many potent biological properties. Early studies of these compounds investigated their mutagenic and genotoxic activity in a number of in vitro assays. Recently, a renewed interest in flavonoids has been fueled by the antioxidant and estrogenic effects ascribed to them. This has led to their proposed use as anticarcinogens and cardioprotective agents, prompting a dramatic increase in their consumption as dietary supplements. Unfortunately, the potentially toxic effects of excessive flavonoid intake are largely ignored. At higher doses, flavonoids may act as mutagens, pro-oxidants that generate free radicals, and as inhibitors of key enzymes involved in hormone metabolism. Thus, in high doses, the adverse effects of flavonoids may outweigh their beneficial ones, and caution should be exercised in ingesting them at levels above that which would be obtained from a typical vegetarian diet. The unborn fetus may be especially at risk, since flavonoids readily cross the placenta. More research on the toxicological properties of flavonoids is warranted given their increasing levels of consumption
Notes: DA - 20010202
IS - 0891-5849
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Mutagens)
RN - 0 (Thyroid Hormones)
RN - EC 5.99.1.2 (DNA Topoisomerases, Type I)
SB - IM

224. Sosulski,F.W., L.A.Minja, and D.A.Christensen. 1988. Trypsin inhibitors and nutritive value in cereals. Plant Foods Hum. Nutr. 38:23-34.

Ref ID: 1857
Keywords: analysis/Animals/antagonists & inhibitors/Appetite
Regulation/Assay/Benzoylarginine
Nitroanilide/Cereals/Chickens/cultivars/Diet/Digestion/Digestive System/drug
effects/Ecology/Heat/Hypertrophy/Male/Mice/Nutritive
Value/Pancreas/pathology/pharmacology/Resorcinols/Support,Non-
U.S.Gov't/Trypsin/Trypsin Inhibitors
Reprint: Not in File
Abstract: Chemical assays demonstrated that rye and barley cultivars contained relatively high levels of trypsin inhibitor activity as compared to oat and wheat cultivars, and there was a low degree of stability to prolonged wet treatment. In feeding trials with broiler chicks, incorporation of 67% raw barley or 50% raw rye in the rations enhanced feed intake and weight gains, and the marginal increases in pancreas weight were not reversed by feeding autoclaved cereals. Raw rye cultivars fed at the 75% level in mouse diets reduced weight gains, feed efficiency, protein digestibility, protein efficiency ratio and biological value. Autoclaving to inactivate trypsin inhibitors, or ether extraction to remove the resorcinols, failed to improve the nutritive value of rye diets for mice. It appeared that the protease inhibitors in the four cereals were relatively weak inhibitors of trypsin in the digestive system despite stability to dry heat and acid pH
Notes: DA - 19890417
IS - 0921-9668
LA - eng
PT - Journal Article
RN - 0 (Resorcinols)
RN - 0 (Trypsin Inhibitors)
RN - 911-76-2 (Benzoylarginine Nitroanilide)
SB - IM

225. Standley,L., P.Winterton, J.L.Marnewick, W.C.Gelderblom, E.Joubert, and T.J.Britz. 2001. Influence of processing stages on antimutagenic and antioxidant potentials of rooibos tea. J Agric Food Chem. 49:114-117.
Ref ID: 9
Keywords: 2-Acetylaminofluorene/analysis/antagonists & inhibitors/Antimutagenic
Agents/antioxidant/Antioxidants/chemistry/comparison/Desiccation/Fermentation/Food/F
ood Handling/Free Radical Scavengers/Mutagenicity
Tests/pharmacology/polyphenols/Steam/Superoxides/Support,Non-U.S.Gov't/Tea
Reprint: Not in File
Abstract: 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 antioxdant activities of the tea is suggested as processing caused a significant reduction in the total polyphenolic content
Notes: DA - 20010222
IS - 0021-8561
LA - eng

PT - Journal Article
RN - 0 (Antimutagenic Agents)
RN - 0 (Antioxidants)
RN - 0 (Free Radical Scavengers)
RN - 11062-77-4 (Superoxides)
RN - 53-96-3 (2-Acetylaminofluorene)
SB - IM

226. Sterling, M. Cranberries Move Beyone UTIs. That Natural Foods Merchandiser [March 2004], 118-119. 3-1-2004.
Ref Type: Magazine Article
Ref ID: 654
Keywords: cranberries,antioxidants

227. Sun,A.Y., A.Simonyi, and G.Y.Sun. 2002. The "French Paradox" and beyond: neuroprotective effects of polyphenols. Free Radic. Biol Med 32:314-318.
Ref ID: 300
Keywords: Aging/Antioxidants/Brain/Cardiovascular Diseases/Coronary Disease/Diet/drug effects/Flavonoids/France/Free Radicals/Health/Heart/Heart Diseases/Human/Incidence/Lipid Peroxidation/metabolism/Neurodegenerative Diseases/Neurons/Oxidative Stress/Oxygen/pharmacology/Phenols/Polymers/prevention & control/Stilbenes/Support,U.S.Gov't,P.H.S./Vitis/Wine
Reprint: Not in File
Abstract: Chronic ethanol ingestion is known to cause oxidative damage to a number of organs including the brain. This is partly due to the ability of ethanol to enhance oxygen free radical production and lipid peroxidation. Increase in oxidative stress has been regarded as an important underlying factor for a number of human health problems including cardiovascular diseases, aging, as well as many age-related neurodegenerative diseases. The strikingly low incidences of coronary heart diseases (CHD) in France, despite intake of a high-fat diet, have been attributed to the consumption of red wine containing high levels of polyphenolic compounds. In recent years, understanding the "French Paradox" has stimulated new research interest to investigate whether polyphenolic antioxidants may offer protective effects beyond the cardiovascular system, and whether polyphenols from other botanical sources may similarly offer beneficial effects to human health. Our studies with animal models have provided information clearly indicating the ability of grape polyphenols to ameliorate neuronal damages due to chronic ethanol consumption. Studies with resveratrol, an important component of grape polyphenols, also show protective effects on neuron cell death induced by ethanol and other oxidative agents. These studies demonstrate an urgent need to extend research beyond the "French Paradox" towards better understanding molecular mechanisms of action of polyphenolic compounds and their application to human health
Notes: DA - 20020213
IS - 0891-5849
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Free Radicals)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (Stilbenes)
RN - 0 (polyphenols)
RN - 501-36-0 (resveratrol)
SB - IM

228. Sweeney,J.P., andA.C.Marsh. 1971. Effects of selected herbicides on provitamin A content of vegetables. J Agric Food Chem. 19:854-856.
Ref ID: 407
Keywords: analysis/Carotenoids/drug effects/Herbicides/pharmacology/Plants/Soil/Species Specificity/Vegetables
Reprint: Not in File
Notes: DA - 19720320
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Herbicides)
RN - 36-88-4 (Carotenoids)
SB - IM

229. Takeoka,G.R., L.Dao, S.Flessa, D.M.Gillespie, W.T.Jewell, B.Huebner, D.Bertow, and S.E.Ebeler. 2001. Processing effects on lycopene content and antioxidant activity of tomatoes. J Agric Food Chem. 49:3713-3717.
Ref ID: 733
Keywords: Agriculture/analysis/antioxidant/Antioxidants/Carotenoids/chemistry/Chlorogenic Acid/comparison/Food Handling/Health/lycopene/Lycopersicon esculentum/metabolism/Methanol/methods/Oxygen/Plants/polyphenols/Research/Risk/Support,Non-U.S.Gov't/Time/Time Factors/Tomato
Reprint: Not in File
Abstract: Consumption of tomato products has been associated with decreased risk of some cancer types, and the tomato antioxidant, lycopene, is thought to play an important role in the observed health effects. In this study, four carotenoids, trans-lycopene, phytofluene, phytoene, and zeta-carotene, were quantified in tomato products. Samples of raw tomatoes, tomato juice after hot break scalder, and final paste were obtained from two different processing plants over two years. Comparison of carotenoid levels throughout processing indicated that lycopene losses during processing of tomatoes into final paste (25-30 degrees Brix) ranged from 9 to 28%. The initial Brix level of the raw tomatoes appeared to influence the amount of lycopene loss that occurred, possibly due to the differences in processing time required to achieve the final desired Brix level of the paste. In general, no consistent changes in the other carotenoids were observed as a function of processing. The antioxidant activity of fresh tomatoes, tomato paste, and three fractions obtained from these products (i.e., aqueous, methanol, and hexane fractions) was also determined. In both a free radical quenching assay and a singlet oxygen quenching assay, significant antioxidant activity was found in both the hexane fraction (containing lycopene) and the methanol fraction, which contained the phenolic antioxidants caffeic and chlorogenic acid. The results suggest that in addition to lycopene, polyphenols in tomatoes may also be important in conferring protective antioxidative effects
Notes: DA - 20010821
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 36-88-4 (Carotenoids)
RN - 502-65-8 (lycopene)
SB - IM

230. Thompson,L.U. 1994. Antioxidants and hormone-mediated health benefits of whole grains. Crit Rev Food Sci Nutr. 34:473-497.
Ref ID: 611
Keywords: Antioxidants/Cereals/Diet/Estrogens/Estrogens,Non-Steroidal/Free Radicals/Health/Health Promotion/Heart/Heart Diseases/Hormones/Human/Isoflavones/Lignans/Neoplasms/Ontario/Plant Preparations/prevention & control/Prostate/Risk/Vitamin E

Reprint: Not in File
Abstract: Lignans and phytoestrogens have been associated with protective effect against hormone-related diseases, for example, cancer of the breast and prostate, and potential mechanisms for this effect have been reported. Antioxidants also appear to have some protective effect against diseases associated with reactive free radicals such as coronary heart disease and cancer. Whole grains contain some of these substances particularly the mammalian lignan precursors, vitamin E, other phenolic compounds, Se, and phytic acid. These substances may in part be responsible for the reduced risk of cancer and coronary heart disease associated with intake of high-fiber diets containing whole grains. Because they are more associated with the fiber in the outer layers of the grain, the intake of whole vs. refined grain is emphasized for optimum health benefits
Notes: DA - 19950209
IS - 1040-8398
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Estrogens)
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Hormones)
RN - 0 (Isoflavones)
RN - 0 (Lignans)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

231. Thybo,A.K., J.P.Molgaard, and Kidmose U. 2001. Effect of different organic growing conditions on quality of cooked potatoes. J Sci Food Agric 82:12-18.
Ref ID: 702
Keywords: organic/Potatoes/quality
Reprint: In File

232. Tsao,R., R.Yang, J.C.Young, and H.Zhu. 2003. Polyphenolic profiles in eight apple cultivars using high-performance liquid chromatography (HPLC). J Agric Food Chem. 51:6347-6353.
Ref ID: 72
Keywords: Agriculture/analogs & derivatives/analysis/Anthocyanins/Chalcone/chemistry/Chromatography,High Pressure Liquid/Coumaric Acids/Flavonoids/Flavonols/Fruit/growth & development/Health Promotion/Human/Malus/Ontario/Phenols/Plant Extracts/Polymers/Sensitivity and Specificity/Species Specificity
Reprint: Not in File
Abstract: Polyphenolic compounds of apple may play an important role in physiologic functions related to human health. Different polyphenolics may have varied biological activities including antioxidant activity. The objective of this study was to investigate the profiles of polyphenolic compounds in different apple varieties and different parts of an apple. The total and individual polyphenolics differed significantly among the eight apple cultivars grown in Ontario, and the peels had higher concentrations than the flesh. Among the tested cultivars, Red Delicious and Northern Spy had the highest concentrations and Empire the lowest. Five major polyphenolic groups with a total of 16 identified individual compounds were found, among which the dihydroxycinnamic acid esters, phloretin glycosides, and flavan-3-ols were found in both flesh and peel, whereas quercetin glycosides were almost exclusively found in the peel. Cyanidin 3-galactoside was unique to and found only in red apple peels. In both apple peel and flesh, the predominant group of polyphenolics was the procyanidins, followed by quercetin glycosides in the peel and hydroxycinnamic acid esters in the flesh. 3-Hydroxyphloretin 2'-xyloglucoside was newly identified in apple. The results obtained in this study will further the understanding of the polyphenolic composition of apples and their roles

in health-promoting physiological functions
Notes: DA - 20031001
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Coumaric Acids)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Phenols)
RN - 0 (Plant Extracts)
RN - 0 (Polymers)
RN - 1083-30-3 (dihydrochalcone)
RN - 94-41-7 (Chalcone)
SB - IM

233. Tudela,J.A., E.Cantos, J.C.Espin, F.A.Tomas-Barberan, and M.I.Gil. 2002. Induction of antioxidant flavonol biosynthesis in fresh-cut potatoes. Effect of domestic cooking. J Agric Food Chem. 50:5925-5931.
Ref ID: 207
Keywords: analogs & derivatives/analysis/Antioxidants/biosynthesis/Caffeic Acids/chemistry/Chlorogenic Acid/Chromatography,High Pressure Liquid/Cold/Diet/Flavonoids/Flavonols/Food Preservation/Glucosides/Heat/Light/metabolism/methods/Potatoes/Quercetin/Rutin/Spectrometry,Mass,Electrospray Ionization/Support,Non-U.S.Gov't/Tryptophan/Tyrosine
Reprint: Not in File
Abstract: The effect of fresh-cutting and subsequent cold storage on phenolic compounds from five long-term-stored potato cultivars (Agria, Cara, Liseta, Monalisa, and Spunta) was studied. Fresh-cutting induced the biosynthesis of three flavonols, which were identified by HPLC-DAD-ESIMS as quercetin 3-rutinoside, quercetin 3-diglucoside, and quercetin 3-glucosylrutinoside. The flavonols were detected after a lag period of 3 days of cold storage. The content ranged from 6 to 14 mg/100 g of fresh weight depending on the cultivar after 6 days of storage. Chlorogenic acid as the main caffeic acid derivative and the amino acids tyrosine and tryptophan were also quantified. The effect of cold storage under light or in dark was studied with new-season-harvested Monalisa potatoes. The flavonol induction was higher in fresh-cut potatoes stored under light than in the dark. However, caffeic acid derivatives were not affected. Domestic cooking such as boiling, microwaving, and frying provoked a partial loss of the flavonols, which were retained in the range of 4-16 mg per serving (213 g). Steam-cooking resulted in the highest retention of caffeic acid derivatives and aromatic amino acids compared with the other cooking methods studied. This means that due to the large amount of potatoes consumed in the Western diet, fresh-cut potatoes can be a significant source of health-promoting phenolics
Notes: DA - 20021002
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Caffeic Acids)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Glucosides)
RN - 117-39-5 (Quercetin)
RN - 153-18-4 (Rutin)
RN - 327-97-9 (Chlorogenic Acid)
RN - 331-39-5 (caffeic acid)
RN - 55520-40-6 (Tyrosine)

RN - 73-22-3 (Tryptophan)
SB - IM

234. Turner,K.E., K.E.McClure, W.P.Weiss, R.J.Borton, and J.G.Foster. 2002. Alpha-tocopherol concentrations and case life of lamb muscle as influenced by concentrate or pasture finishing. J Anim Sci 80:2513-2521.
Ref ID: 1
Keywords: administration & dosage/alpha-Tocopherol/analysis/Animal Feed/Animals/chemistry/Color/Diet/Dose-Response Relationship,Drug/farming systems/Female/Food Handling/Food Preservation/growth & development/Male/Meat/metabolism/methods/Muscle,Skeletal/pharmacokinetics/Pigmentation/Research/Sheep/standards/Time Factors/Tissue Distribution/Vitamin E
Reprint: Not in File
Abstract: Two experiments were conducted to evaluate alpha-tocopherol accumulation in muscle of lambs finished on pasture or concentrates. The objective for Exp. 1 was to compare accumulation of alpha-tocopherol in the longissimus muscle of pasture-fed lambs to that of lambs fed three concentrations (15, 150, and 300 IU/kg of DM) of supplemental vitamin E (all rac alpha-tocopheryl acetate) in all-concentrate diets. The objective in Exp. 2 was to investigate the effect of duration of supplemental vitamin E feeding on alpha-tocopherol content and color change during display case storage of lamb muscle. Treatments evaluated in Exp. 2 were: 15 IU of supplemental vitamin E/kg DM fed to finish; 15 IU/kg followed by 300 IU/kg of DM during the last 21 d; and 15 IU/kg DM until 7 d prior to finish, then 300 IU/kg DM. In Exp. 1, alpha-tocopherol concentration of rotational grazed alfalfa and perennial ryegrass averaged 137 and 169 mg/kg of DM. Vitamin E treatments for lambs fed concentrate diets did not affect ADG ($P > 0.15$), but ADG was greater ($P < 0.01$) for concentrate-fed lambs than for grazing lambs. For the concentrate-fed lambs, alpha-tocopherol in longissimus muscle increased quadratically ($P < 0.05$) as dietary concentrations of vitamin E increased. Predicted maximum alpha-tocopherol concentration in muscle occurred at about 400 IU/kg of diet DM. Longissimus muscle from lambs grazing alfalfa or ryegrass had similar ($P > 0.50$) alpha-tocopherol concentrations, and those concentrations were similar to values obtained when the concentrate diet supplemented with 150 IU of vitamin E/kg was fed. In Exp. 2, no differences ($P > 0.10$) in ADG were observed. Concentrations of longissimus alpha-tocopherol were highest when 300 IU supplemental vitamin E was fed for 21 d prior to slaughter. During a 6-d display period, semimembranosus steaks from lambs fed 300 IU of supplemental vitamin E/kg for either 7 or 21 d had higher a* and b* color readings than steaks from lambs fed 15 IU/kg of supplemental vitamin E. Increased consumption of vitamin E either via pasture or supplementation results in higher alpha-tocopherol concentrations in meat
Notes: DA - 20021104
IS - 0021-8812
LA - eng
PT - Journal Article
RN - 59-02-9 (alpha-Tocopherol)
SB - IM

235. Turner,N.J., B.M.Thomson, and I.C.Shaw. 2003. Bioactive isoflavones in functional foods: the importance of gut microflora on bioavailability. Nutr. Rev 61:204-213.
Ref ID: 95
Keywords: administration & dosage/Biological Availability/chemistry/Digestive System/Health Food/Human/Intestinal Absorption/Intestines/Isoflavones/metabolism/microbiology/pharmacokinetics/Soybeans
Reprint: Not in File
Abstract: Isoflavones present in soy may have risk and benefits to human health. Human gut microflora have been shown to exert metabolic activities on isoflavones, which influences bioavailability and bioactivity. Absorption of isoflavones is likely to occur in the small intestine where there is a diverse range of microfloral species able to hydrolyze conjugated isoflavones, releasing the bioactive aglycone for absorption or further metabolism and reconjugation. The identification of gut microbes that metabolize isoflavone aglycones is not well established. Such

information may lead to a better understanding of the bioavailability of isoflavones in functional foods
Notes: DA - 20030807
IS - 0029-6643
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Isoflavones)
SB - IM

236. Tyssandier,V., C.Feillet-Coudray, C.Caris-Veyrat, J.C.Guilland, C.Coudray, S.Bureau, M.Reich, M.J.Amiot-Carlin, C.Bouteloup-Demange, Y.Boirie, and P.Borel. 2004. Effect of tomato product consumption on the plasma status of antioxidant microconstituents and on the plasma total antioxidant capacity in healthy subjects. J Am Coll. Nutr. 23:148-156.
Ref ID: 756
Keywords: antioxidant/beta Carotene/blood/Chemiluminescence/Diet/Fasting/Female/Food/France/Human/lycopene /Nutrition/Oxidative Stress/Research/Tomato/Vitamin C
Reprint: Not in File
Abstract: OBJECTIVES: to identify the plasma antioxidant microconstituents mainly affected by tomato product consumption, to check whether tomato product consumption can affect antioxidant status, and to identify tomato-product antioxidant-microconstituents mainly involved in the effect of these products on oxidative stress. DESIGN: Medium-term dietary supplementation study. SETTING: Human Nutrition Laboratory, Clermont-Ferrand, France. SUBJECTS: Twenty healthy young (20 < years < 40), non obese (18 < BMI (kg/m2) < 25), females were recruited by advertisement. All of them completed the study. INTERVENTION: The usual diet of the subjects was supplemented for three weeks with 96 g/day tomato puree. The volunteers then avoided tomato-product-rich foods for a subsequent three-week period. Measures of Outcome: Fasting blood samples were collected the day before supplementation, the day after the supplementation period, and the day after the depletion period. The status of several antioxidant microconstituents (plasma microconstituent concentrations), and the antioxidant status (plasma total antioxidant capacity) were assessed. RESULTS: Supplementation with tomato puree significantly increased plasma lycopene, beta-carotene and lutein. Conversely it did not significantly affect plasma vitamin C and E, plasma antioxidant trace metals (Cu, Zn and Se), and plasma total antioxidant capacity. Avoidance of tomato-product-rich foods for three weeks significantly ($p < 0.05$) decreased plasma lycopene, beta-carotene, lutein and vitamin C, as well as plasma total antioxidant capacity. Plasma total antioxidant capacity, as measured by chemiluminescence, was positively related ($p < 0.05$) to the status of lycopene, vitamin C and beta-carotene. CONCLUSIONS: Tomato product consumption can affect not only the lycopene status, but also that of other antioxidant microconstituents (beta-carotene and lutein). Lycopene, but also beta-carotene, are apparently the main tomato microconstituents responsible for the effect of tomato products on antioxidant status
Notes: DA - 20040329
IS - 0731-5724
LA - eng
PT - Journal Article
SB - IM

237. U.S.Department of Agriculture. USDA Continuing Survey of Food Intakes by Individuals, 1994-1996. 1997.
Ref Type: Generic
Ref ID: 1848
Keywords: Food

238. USDA, Nutrient Data Lab, Flood Composition Lab, Beltsville Human Nutrition Research Center, and ARS. USDA Database for the Flavonoid Content of Selected Foods. 2003. USDA, ARS.
Ref Type: Sound Recording
Ref ID: 1844
Keywords: flavonoid/Food/foods/USDA database

239. Valenzuela,A., J.Sanhueza, and S.Nieto. 2003. Cholesterol oxidation: health hazard and the role of antioxidants in prevention. Biol Res. 36:291-302.
Ref ID: 49
Keywords: administration & dosage/Antioxidants/Cholesterol/Cholesterol,Dietary/Diet/drug effects/Heat/Human/metabolism/Oxidation-Reduction/Sterols/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: Cholesterol is a molecule with a double bond in its structure and is therefore susceptible to oxidation leading to the formation of oxysterols. These oxidation products are found in many commonly-consumed foods and are formed during their manufacture and/or processing. Concern about oxysterols consumption arises from the potential cytotoxic, mutagenic, atherogenic, and possibly carcinogenic effects of some oxysterols. Eggs and egg-derived products are the main dietary sources of oxysterols. Thermally-processed milk and milk-derived products are another source of oxysterols in our diet. Foods fried in vegetable/animal oil, such as meats and French-fried potatoes, are major sources of oxysterols in the Western diet. Efforts to prevent or to reduce cholesterol oxidation are directed to the use of antioxidants of either synthetic or natural origin. Antioxidants are not only able to inhibit triglyceride oxidation, some of them can also inhibit cholesterol oxidation. Among synthetic antioxidants 2,6-ditertiarybutyl-4-methylphenol (BHT), and tertiary butylhydroquinone (TBHQ) can efficiently inhibit the thermal-induced oxidation of cholesterol. Some natural antioxidants, such as alpha- and gamma-tocopherol, rosemary oleoresin extract, and the flavonoid quercetin, show strong inhibitory action against cholesterol oxidation
Notes: DA - 20031124
IS - 0716-9760
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Cholesterol, Dietary)
RN - 0 (Sterols)
RN - 57-88-5 (Cholesterol)
SB - IM

240. Vallejo,F., F.Tomas-Barberan, and C.Garcia-Viguera. 2003. Health-promoting compounds in broccoli as influenced by refrigerated transport and retail sale period. J Agric Food Chem. 51:3029-3034.
Ref ID: 137
Keywords: analogs & derivatives/analysis/Ascorbic Acid/Brassica/Carbon Dioxide/chemistry/Cold/Coumaric Acids/Flavonoids/Food Packaging/Food Preservation/Glucose/Glucosinolates/Health Promotion/Imidoesters/Indoles/Oxygen/Phenols/Plant Components/Support,Non-U.S.Gov't/Time Factors/Transportation
Reprint: Not in File
Abstract: Total aliphatic and indole glucosinolates, phenolic compounds (flavonoids and hydroxycinnamoyl derivatives), and vitamin C contents were evaluated in freshly harvested broccoli (Brassica oleracea L., var. italica, cv. Marathon) inflorescences. These were film-wrapped and stored for 7 days at 1 degrees C to simulate a maximum period of commercial transport and distribution. After cold storage, inflorescences were kept for 3 days at 15 degrees C to simulate a retail sale period. For wrapping, low-density polyethylene (LDPE) of 11 microm thickness was used. Gas composition was about 17% O(2) and 2% CO(2) during cold storage and about 16% O(2) and 3-4% CO(2) during shelf life within packages. The

predominant glucosinolates were 4-methylsulfinylbutyl-glucosinolate (glucoraphanin), 3-indolylmethyl-glucosinolate (glucobrassicin), and 1-methoxy-3-indolylmethyl-glucosinolate (neoglucobrassicin). The predominant hydroxycinnamoyl derivatives were identified as 1,2,2'-trisinapoylgentiobiose, 1,2-diferuloylgentiobiose, 1,2'-disinapoyl-2-feruloylgentiobiose, and 3-O-caffeoyl-quinic (neochlorogenic acid). Results showed major losses at the end of both periods, in comparison with broccoli at harvest. Thus, the respective losses, at the end of cold storage and retail periods, were 71-80% of total glucosinolates, 62-59% of total flavonoids, 51-44% of sinapic acid derivatives, and 73-74% caffeoyl-quinic acid derivatives. Slight differences in all compound concentrations between storage and retail sale periods were detected. Distribution and retail periods had minimal effects on vitamin C. Weight loss was monitored at the end of both periods
Notes: DA - 20030430
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Coumaric Acids)
RN - 0 (Flavonoids)
RN - 0 (Glucosinolates)
RN - 0 (Imidoesters)
RN - 0 (Indoles)
RN - 0 (Phenols)
RN - 0 (glucoraphanin)
RN - 124-38-9 (Carbon Dioxide)
RN - 4356-52-9 (glucobrassicin)
RN - 50-81-7 (Ascorbic Acid)
RN - 50-99-7 (Glucose)
RN - 7782-44-7 (Oxygen)
SB - IM

241. Vallejo,F., C.Garcia-Viguera, and F.A.Tomas-Barberan. 2003. Changes in broccoli (Brassica oleracea L. Var. italica) health-promoting compounds with inflorescence development. J Agric Food Chem. 51:3776-3782.
Ref ID: 114
Keywords: analogs & derivatives/analysis/Ascorbic Acid/Brassica/chemistry/Chromatography,High Pressure Liquid/Coumaric Acids/Fertilizers/Flavonoids/Glucosinolates/growth & development/Health Promotion/Phenols/Quinic Acid/Spectrum Analysis/Sulfur
Reprint: Not in File
Abstract: Changes in phenolic compounds, total glucosinolates, and vitamin C were monitored during the productive period along five inflorescence development stages of three broccoli commercial cultivars (Marathon, Monterrey, and Vencedor). In an attempt to identify differences due to agronomic factors, broccoli cultivars were grown under different sulfur fertilization with poor (15 kg/ha) and rich (150 kg/ha) rates. Phenolic compounds and vitamin C concentrations showed, in all broccoli cultivars, a rising trend from the first stage until the over-maturity stage, both for rich and poor sulfur fertilization. Significant differences were detected in the first two stages between rich and poor sulfur fertilization in total glucosinolates for all broccoli cultivars, where the highest concentration was always observed in the second development stage (used as minimally processed product) during poor fertilization. With regard to the last three stages, the glucosinolate concentration in the poor sulfur fertilization started to slope down until the over-maturity stage. Where rich sulfur fertilization is concerned, the highest level was reached during the third stage (used as minimally processed product also), and after that, glucosinolate concentration decreased until the fifth stage
Notes: DA - 20030611
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Coumaric Acids)

RN - 0 (Fertilizers)
RN - 0 (Flavonoids)
RN - 0 (Glucosinolates)
RN - 0 (Phenols)
RN - 0 (caffeoylquinic acid)
RN - 1135-24-6 (ferulic acid)
RN - 50-81-7 (Ascorbic Acid)
RN - 77-95-2 (Quinic Acid)
RN - 7704-34-9 (Sulfur)
SB - IM

242. van der Sluis,A.A., M.Dekker, R.Verkerk, and W.M.Jongen. 2000. An improved, rapid in vitro method to measure antioxidant activity. Application On selected flavonoids and apple juice. J Agric Food Chem. 48:4116-4122.
Ref ID: 416
Keywords: analysis/Animals/Antioxidants/Ascorbic Acid/Beverages/chemistry/drug effects/Flavonoids/Food/Food Technology/Health/In Vitro/Lipid Peroxidation/Male/metabolism/Microsomes,Liver/Netherlands/pharmacology/Rats/Rats,Wistar/Rosales
Reprint: Not in File
Abstract: A rapid in vitro method for measuring antioxidant activity is presented, which enables the evaluation of health claims and the optimization of product development with respect to health protecting compounds. Antioxidant activity is assessed in a system in which lipid peroxidation is induced in male rat liver microsomes by ascorbic acid and FeSO(4). This method has been significantly improved by enabling the use of microtiter plates and an ELISA reader. Large numbers of samples can be analyzed with good reproducibility, which is necessary when dealing with microsomes possessing biological variability. An objective mathematical procedure has been developed to translate data obtained from the lipid peroxidation assay into a value describing the antioxidant activity. As an illustration the method has been applied to measure antioxidant activity of individual flavonoids and apple juice
Notes: DA - 20001113
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
SB - IM

243. van der Sluis,A.A., M.Dekker, A.de Jager, and W.M.Jongen. 2001. Activity and concentration of polyphenolic antioxidants in apple: effect of cultivar, harvest year, and storage conditions. J Agric Food Chem. 49:3606-3613.
Ref ID: 336
Keywords: Antioxidants/Catechin/chemistry/Chlorogenic Acid/Diet/Flavonoids/Food/Food Handling/Health/Malus/metabolism/Netherlands/pharmacology/Phenols/Polymers/Seasons/Temperature
Reprint: Not in File
Abstract: Consumers' increasing interest in the relationship between diet and health is a sign for food producers to pay more attention to potential health-protecting compounds in new product development and food processing. From a production chain perspective the choice of the raw material that is used is important for the health-protecting potential of the end product. Four apple cultivars (Jonagold, Golden Delicious, Cox's Orange, and Elstar), which can be used as fresh apples or in processed apple products, were compared with regard to flavonol, catechins, phloridzin, and chlorogenic acid concentrations and antioxidant activity. Jonagold apples possessed the highest flavonoid concentration and the highest antioxidant activity. To study seasonal differences, apples from three different harvest years were analyzed, but in three cultivars no effect on flavonoid concentration and antioxidant activity was

observed. Long-term storage, both at refrigerator temperature and under controlled atmosphere conditions, was found not to influence flavonoid concentration or antioxidant activity
Notes: DA - 20010821
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (polyphenols)
SB - IM

244. van der Sluis,A.A., M.Dekker, G.Skrede, and W.M.Jongen. 2004. Activity and concentration of polyphenolic antioxidants in apple juice. 2. Effect of novel production methods. J Agric Food Chem. 52:2840-2848.
Ref ID: 3
Reprint: Not in File
Abstract: There is a great interest in food components that possess possible health-protecting properties, as is the case with flavonoids. Previous research showed that conventional apple juice processing resulted in juices poor in flavonoids and with a low antioxidant activity. This paper shows that it is possible to improve flavonoid content in juice and its antioxidant activity by applying an alcoholic extraction either on the pulp or on the pomace. The levels of flavonoids and chlorogenic acid in enriched juice were between 1.4 (chlorogenic acid) and 9 (quercetin glycosides) times higher than in conventional apple juice. In enriched juice the antioxidant activity was 5 times higher than in conventional apple juice, with 52% of the antioxidant activity of the originating fruits present. The novel processing method had similar effects for three apple cultivars tested (Elstar, Golden Delicious, and Jonagold). The taste and color of enriched juice were different from those of conventional juice
Notes: DA - 20040512
IS - 0021-8561
LA - eng
PT - Journal Article
SB - IM

245. van der Sluis,A.A., M.Dekker, G.Skrede, and W.M.Jongen. 2004. Activity and concentration of polyphenolic antioxidants in apple juice. 2. Effect of novel production methods. J Agric Food Chem. 52:2840-2848.
Ref ID: 713
Keywords: antioxidant/Antioxidants/Chlorogenic Acid/Color/conventional/cultivars/flavonoid/Flavonoids/Food/Fruit/Glycosides/methods/Netherlands/quality/Quercetin/Research/Taste/Time
Reprint: Not in File
Abstract: There is a great interest in food components that possess possible health-protecting properties, as is the case with flavonoids. Previous research showed that conventional apple juice processing resulted in juices poor in flavonoids and with a low antioxidant activity. This paper shows that it is possible to improve flavonoid content in juice and its antioxidant activity by applying an alcoholic extraction either on the pulp or on the pomace. The levels of flavonoids and chlorogenic acid in enriched juice were between 1.4 (chlorogenic acid) and 9 (quercetin glycosides) times higher than in conventional apple juice. In enriched juice the antioxidant activity was 5 times higher than in conventional apple juice, with 52% of the antioxidant activity of the originating fruits present. The novel processing method had similar effects for three apple cultivars tested (Elstar, Golden Delicious, and Jonagold). The taste and color of enriched juice were different from those of conventional juice
Notes: DA - 20040512
IS - 0021-8561

LA - eng
PT - Journal Article
SB - IM

246. Verhoeyen,M.E., A.Bovy, G.Collins, S.Muir, S.Robinson, C.H.de Vos, and S.Colliver. 2002. Increasing antioxidant levels in tomatoes through modification of the flavonoid biosynthetic pathway. J Exp. Bot. 53:2099-2106.
Ref ID: 211
Keywords: Acyl Coenzyme A/Acyltransferases/analogs & derivatives/Antioxidants/biosynthesis/Chalcone/chemistry/Diet/Flavonoids/Flavonols/Fruit/Gene Expression Regulation,Enzymologic/genetics/Health/Human/Intramolecular Lyases/Kaempferols/Lycopersicon esculentum/Malonyl Coenzyme A/metabolism/Molecular Structure/Oxidoreductases/Plant Epidermis/Plants,Genetically Modified/Quercetin
Reprint: Not in File
Abstract: Flavonoids are a diverse group of phenolic secondary metabolites that occur naturally in plants and therefore form an integral component of the human diet. Many of the compounds belonging to this group are potent antioxidants in vitro and epidemiological studies suggest a direct correlation between high flavonoid intake and decreased risk of cardiovascular disease, cancer and other age-related diseases. Enhancing flavonoid biosynthesis in chosen crops may provide new raw materials that have the potential to be used in foods designed for specific benefits to human health. Using genetic modification, it was possible to generate several tomato lines with significantly altered flavonoid content and to probe the role and importance of several key enzymatic steps in the tomato flavonoid biosynthetic pathway. Most notably an up to 78-fold increase in total fruit flavonols was achieved through ectopic expression of a single biosynthetic enzyme, chalcone isomerase. In addition, chalcone synthase and flavonol synthase transgenes were found to act synergistically to up-regulate flavonol biosynthesis significantly in tomato flesh tissues
Notes: DA - 20020926
IS - 0022-0957
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Acyl Coenzyme A)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Flavonols)
RN - 0 (Kaempferols)
RN - 117-39-5 (Quercetin)
RN - 119785-99-8 (4-coumaroyl-coenzyme A)
RN - 520-18-3 (kaempferol)
RN - 524-14-1 (Malonyl Coenzyme A)
RN - 73692-50-9 (naringenin chalcone)
RN - 94-41-7 (Chalcone)
RN - EC 1. (Oxidoreductases)
RN - EC 1.3.- (flavonol synthase)
RN - EC 2.3. (Acyltransferases)
RN - EC 2.3.1.74 (flavanone synthetase)
RN - EC 5.5 (Intramolecular Lyases)
RN - EC 5.5.1.6 (chalcone isomerase)
SB - IM

247. Vidal-Valverde,C., J.Frias, A.Hernandex, P.J.Martin-Alvarez, I.Sierra, C.Rodriguez, I.Balzquez, and G.Vicente. 2003. Assessment of nutritional compounds and antinutritional factors in pea (*Pisum sativum*) seeds. J Sci Food Agric 83:298-306.
Ref ID: 697

Keywords: Seeds
Reprint: In File

248. Vinson,J.A., Y.Hao, X.Su, and L.Zubik. 1998. Phenol antioxidant quantity and quality in foods: vegetables. J. Agric. Food Chem. 46:3630-3634.
Ref ID: 1838
Keywords: antioxidant/Food/foods/Phenol/quality/Vegetables
Reprint: Not in File
Abstract: not available

249. Vivekananthan,D.P., M.S.Penn, S.K.Sapp, A.Hsu, and E.J.Topol. 2003. Use of antioxidant vitamins for the prevention of cardiovascular disease: meta-analysis of randomised trials. Lancet 361:2017-2023.
Ref ID: 1853
Keywords: adverse effects/alpha-Tocopherol/analysis/antioxidant/Antioxidants/beta Carotene/Cardiovascular Diseases/Cause of Death/Cerebrovascular Accident/Clinical Trials/Disease/Human/Medicine/Meta-Analysis/methods/mortality/Odds Ratio/prevention & control/Randomized Controlled Trials/Risk/Risk Factors/Support,U.S.Gov't,P.H.S./therapeutic use/Vitamin E/Vitamins
Reprint: Not in File
Abstract: INTRODUCTION: Oxidised LDL is thought to play an important part in the pathogenesis of atherosclerosis. Observational studies have associated alpha tocopherol (vitamin E), beta carotene, or both, with reductions in cardiovascular events, but not clinical trials. We did a meta-analysis to assess the effect of these compounds on long-term cardiovascular mortality and morbidity. METHODS: We analysed seven randomised trials of vitamin E treatment and, separately, eight of beta carotene treatment; all trials included 1000 or more patients. The dose range for vitamin E was 50-800 IU, and for beta carotene was 15-50 mg. Follow-up ranged from 1.4 to 12.0 years. FINDINGS: The vitamin E trials involved a total of 81788 patients and the beta carotene trials 138113 in the all-cause mortality analyses. Vitamin E did not provide benefit in mortality compared with control treatment (11.3 vs 11.1%, odds ratio 1.02 [95% CI 0.98-1.06] p=0.42) or significantly decrease risk of cardiovascular death (6.0 vs 6.0%, p=0.86) or cerebrovascular accident (3.6 vs 3.5%, p=0.31). Beta carotene led to a small but significant increase in all-cause mortality (7.4 vs 7.0%, 1.07 [1.02-1.11] p=0.003) and with a slight increase in cardiovascular death (3.4 vs 3.1%, 1.1 [1.03-1.17] p=0.003). No significant heterogeneity was noted for any analysis. INTERPRETATION: The lack of a salutary effect was seen consistently for various doses of vitamins in diverse populations. Our results, combined with the lack of mechanistic data for efficacy of vitamin E, do not support the routine use of vitamin E
Notes: DA - 20030619
IS - 1474-547X
LA - eng
PT - Journal Article
PT - Meta-Analysis
RN - 0 (Antioxidants)
RN - 59-02-9 (alpha-Tocopherol)
RN - 7235-40-7 (beta Carotene)
SB - AIM
SB - IM

250. Vivekananthan,D.P., M.S.Penn, S.K.Sapp, A.Hsu, and E.J.Topol. 2003. Use of antioxidant vitamins for the prevention of cardiovascular disease: meta-analysis of randomised trials. Lancet 361:2017-2023.
Ref ID: 1839
Keywords: adverse effects/alpha-Tocopherol/analysis/antioxidant/Antioxidants/beta Carotene/Cardiovascular Diseases/Cause of Death/Cerebrovascular Accident/Clinical Trials/Disease/Human/Medicine/Meta-Analysis/methods/mortality/Odds Ratio/prevention & control/Randomized Controlled Trials/Risk/Risk

Factors/Support,U.S.Gov't,P.H.S./therapeutic use/Vitamin E/Vitamins
Reprint: Not in File
Abstract: INTRODUCTION: Oxidised LDL is thought to play an important part in the pathogenesis of atherosclerosis. Observational studies have associated alpha tocopherol (vitamin E), beta carotene, or both, with reductions in cardiovascular events, but not clinical trials. We did a meta-analysis to assess the effect of these compounds on long-term cardiovascular mortality and morbidity. METHODS: We analysed seven randomised trials of vitamin E treatment and, separately, eight of beta carotene treatment; all trials included 1000 or more patients. The dose range for vitamin E was 50-800 IU, and for beta carotene was 15-50 mg. Follow-up ranged from 1.4 to 12.0 years. FINDINGS: The vitamin E trials involved a total of 81788 patients and the beta carotene trials 138113 in the all-cause mortality analyses. Vitamin E did not provide benefit in mortality compared with control treatment (11.3 vs 11.1%, odds ratio 1.02 [95% CI 0.98-1.06] p=0.42) or significantly decrease risk of cardiovascular death (6.0 vs 6.0%, p=0.86) or cerebrovascular accident (3.6 vs 3.5%, p=0.31). Beta carotene led to a small but significant increase in all-cause mortality (7.4 vs 7.0%, 1.07 [1.02-1.11] p=0.003) and with a slight increase in cardiovascular death (3.4 vs 3.1%, 1.1 [1.03-1.17] p=0.003). No significant heterogeneity was noted for any analysis. INTERPRETATION: The lack of a salutary effect was seen consistently for various doses of vitamins in diverse populations. Our results, combined with the lack of mechanistic data for efficacy of vitamin E, do not support the routine use of vitamin E
Notes: DA - 20030619
IS - 1474-547X
LA - eng
PT - Journal Article
PT - Meta-Analysis
RN - 0 (Antioxidants)
RN - 59-02-9 (alpha-Tocopherol)
RN - 7235-40-7 (beta Carotene)
SB - AIM
SB - IM

251. Voglman, H. From Healthy Soil to Healthy Food: An analysis of the Quality of Food Produced under Contrasting Agricultural Systems. Annual Conference of the McCarrison Society of Scotland, Dundee. 10-1-1986.
Ref Type: Unenacted Bill/Resolution
Ref ID: 688
Keywords: analysis/Food/quality/Soil

252. Vollman,J., H.Grausgruber, H.Wagentristl, H.Wohleser, and P.Michele. 3 A.D. Trypsin inhibitor activity of soybean as affected by genotype ad fertilisation. J Sci Food Agric 83:1581-1586.
Ref ID: 696
Keywords: Genotype/Trypsin
Reprint: In File

253. Wang,S.Y., andH.S.Lin. 2000. Antioxidant activity in fruits and leaves of blackberry, raspberry, and strawberry varies with cultivar and developmental stage. J Agric Food Chem. 48:140-146.
Ref ID: 718
Keywords:
Agriculture/analysis/Anthocyanins/antioxidant/Antioxidants/chemistry/cultivars/Fragaria/Free Radicals/Fruit/growth & development/ORAC/Oxygen/Phenols/Plant Leaves/Plants/Research/strawberries
Reprint: Not in File
Abstract: Fruits and leaves from different cultivars of thornless blackberry (Rubus sp.), red raspberry (Rubus idaeus L.), black raspberry (Rubus occidentalis L.), and strawberry (Fragaria x ananassa D.) plants were analyzed for total antioxidant capacity (oxygen radical absorbance capacity, ORAC) and total phenolic content. In addition, fruits were analyzed for total anthocyanin content. Blackberries and strawberries had the highest ORAC values during the

green stages, whereas red raspberries had the highest ORAC activity at the ripe stage. Total anthocyanin content increased with maturity for all three species of fruits. Compared with fruits, leaves were found to have higher ORAC values. In fruits, ORAC values ranged from 7.8 to 33.7 micromol of Trolox equivalents (TE)/g of fresh berries (35. 0-162.1 micromol of TE/g of dry matter), whereas in leaves, ORAC values ranged from 69.7 to 182.2 micromol of TE/g of fresh leaves (205.0-728.8 micromol of TE/g of dry matter). As the leaves become older, the ORAC values and total phenolic contents decreased. The results showed a linear correlation between total phenolic content and ORAC activity for fruits and leaves. For ripe berries, a linear relationship existed between ORAC values and anthocyanin content. Of the ripe fruits tested, on the basis of wet weight of fruit, cv. Jewel black raspberry and blackberries may be the richest source for antioxidants. On the basis of the dry weight of fruit, strawberries had the highest ORAC activity followed by black raspberries (cv. Jewel), blackberries, and red raspberries
Notes: DA - 20000424
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Free Radicals)
RN - 0 (Phenols)
SB - IM

254. Wang,S.Y., W.Zheng, and G.J.Galletta. 2002. Cultural system affects fruit quality and antioxidant capacity in strawberries. J Agric Food Chem. 50:6534-6542.
Ref ID: 749
Keywords: Acids/Agriculture/analysis/Anthocyanins/antioxidant/Antioxidants/Ascorbic Acid/chemistry/Citric Acid/flavonoid/Flavonoids/Flavonols/Fragaria/Fruit/genetics/Genotype/Glucose/growth & development/Hydrogen-Ion Concentration/ORAC/pharmacology/Plants/quality/Quercetin/Research/strawberries/Taste
Reprint: Not in File
Abstract: Cultural system [hill plasticulture (HC) versus matted row (MR)] and genotype interactions affected strawberry fruit quality. In general, fruit soluble solids content, total sugar, fructose, glucose, ascorbic acid, titratable acid, and citric acid contents were increased in the HC system. Fruit from HC also had higher flavonoid contents and antioxidant capacities. Strawberry fruit contains flavonols as well as other phenolic compounds such as anthocyanins and phenolic acids. Pelargonidin-based anthocyanins such as pelargonidin 3-glucoside, pelargonidin 3-rutinoside, and pelargonidin 3-glucoside-succinate were the predominant anthocyanins in strawberry fruit. The content of cyanidin-based anthocyanins, cyanidin 3-glucoside and cyanidin 3-glucoside-succinate, was much lower than that of pelargonidin-based anthocyanins in either system. Strawberry fruit from the HC system had significantly higher amounts of p-coumaroylglucose, dihydroflavonol, quercetin 3-glucoside, quercetin 3-glucuronide, kaempferol 3-glucoside, kaempferol 3-glucuronide, cyanidin 3-glucoside, pelargonidin 3-glucoside, pelargonidin 3-rutinoside, cyanidin 3-glucoside-succinate, and pelargonidin 3-glucoside-succinate. Fruits from plants grown in the MR system generally had the lowest contents of phenolic acids, flavonols, and anthocyanins. Strawberry fruit grown under HC conditions had significantly higher peroxyl radicals (ROO*) absorbance capacity (ORAC)
Notes: DA - 20021016
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Acids)
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)

RN - 0 (Flavonols)
SB - IM

255. Wang,S.Y., andH.S.Lin. 2003. Compost as a soil supplement increases the level of antioxidant compounds and oxygen radical absorbance capacity in strawberries. J Agric Food Chem. 51:6844-6850.
Ref ID: 707
Keywords: Agriculture/analysis/Anthocyanins/antioxidant/Antioxidants/Ascorbic Acid/chemistry/cultivars/Fertilizers/flavonoid/Flavonoids/Fragaria/Fruit/Glutathione/growth & development/Hydrogen Peroxide/Hydroxyl Radical/Oxygen/Peroxides/phenolics/Phenols/Plants/Reactive Oxygen Species/Research/Soil/strawberries/Superoxides
Reprint: Not in File
Abstract: Compost as a soil supplement significantly enhanced levels of ascorbic acid (AsA) and glutathione (GSH) and ratios of AsA/dehydroascorbic acid (DHAsA) and GSH/oxidized glutathione (GSSG) in fruit of two strawberry (Fragaria x ananassa Duch.) cultivars, Allstar and Honeoye. The peroxyl radical (ROO(*)) as well as the superoxide radical (O(2)(*)(-)), hydrogen peroxide (H(2)O(2)), hydroxyl radical (OH(*)), and singlet oxygen ((1)O(2)) absorbance capacity in strawberries increased significantly with increasing fertilizer strength and compost use. The planting medium (compost) x fertilizer interaction for phenolics and flavonoids was significant. Fruit from plants grown in full-strength fertilizer with 50% soil plus 50% compost and 100% compost yielded fruit with the highest levels of phenolics, flavonol, and anthocyanin content. A positive relationship between antioxidant activities and contents of AsA and GSH and ratios of AsA/DHAsA and GSH/GSSG existed in fruit of both strawberry cultivars. Correlation coefficients for the content of antioxidant components versus antioxidant activity [against ROO(*), O(2)(*)(-), H(2)O(2), OH(*), or (1)O(2)] ranged from r( )()= 0.7706 for H(2)O(2) versus GSH/GSSH in cv. Allstar to r = 0.9832 for O(2)(*)(-) versus total flavonoids in cv. Allstar
Notes: DA - 20031029
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Fertilizers)
RN - 0 (Flavonoids)
RN - 0 (Peroxides)
RN - 0 (Phenols)
RN - 0 (Reactive Oxygen Species)
RN - 11062-77-4 (Superoxides)
RN - 3170-83-0 (perhydroxyl radical)
RN - 3352-57-6 (Hydroxyl Radical)
RN - 50-81-7 (Ascorbic Acid)
RN - 70-18-8 (Glutathione)
RN - 7722-84-1 (Hydrogen Peroxide)
SB - IM

256. Watkins,B.A., Y.Li, H.E.Lippman, and M.F.Seifert. 2001. Omega-3 polyunsaturated fatty acids and skeletal health. Exp. Biol Med (Maywood.) 226:485-497.
Ref ID: 353
Keywords: Animals/biosynthesis/Bone and Bones/Bone Diseases/chemistry/diet therapy/drug effects/drug therapy/Estrogens,Non-Steroidal/Fatty Acids/Fatty Acids,Omega-3/Flavonoids/Food/Health/Health Status/Human/Isoflavones/metabolism/pharmacology/Plant Preparations/Support,U.S.Gov't,Non-P.H.S.
Reprint: Not in File
Abstract: This minireview on skeletal biology describes the actions of prostaglandins and

cytokines involved in the local regulation of bone metabolism, it documents the role of lipids in bone biology, and it presents relationships between fatty acids and other factors that impact skeletal metabolism. The data presented herein show consistent and reproducible beneficial effects of omega-3 (n-3) fatty acids on bone metabolism and bone/joint diseases. Polyunsaturated fatty acids modulate eicosanoid biosynthesis in numerous tissues and cell types, alter signal transduction, and influence gene expression. These effects have not been explored in the skeletal system. Future research on n-3 fatty acids in bone biology should focus on the following two aspects. First, the further elucidation of how n-3 fatty acids alter biochemical and molecular processes involved in bone modeling and bone cell differentiation, and second, the evaluation of the potential pharmaceutical applications of these nutraceutical fatty acids in maintaining bone mineral status and controlling inflammatory bone/joint diseases
Notes: DA - 20010608
IS - 1535-3702
LA - eng
PT - Journal Article
PT - Review
PT - Review, Academic
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Fatty Acids, Omega-3)
RN - 0 (Flavonoids)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (phytoestrogens)
SB - IM

257. Weibel,F.P., R.Bickel, S.Leuthold, and T.Alfoldi. 2000. Are organically grown apples tastier and healthier? A comparative field sutdy using conventional and alternative methods to measure fruit quality. ISHS Acta Horticulutrae 517.
Ref ID: 1856
Keywords: conventional/flavanols/Fruit/helath/methods/mineral analysis/Phenols/quality/Taste
Reprint: In File

258. Weibel,F.P., R.Bickel, S.Leuthold, and T.Alfoldi. 2001. Are organically grown apples tastier and healthier? A comparative field sutdy using conventional and alternative methods to measure fruit quality. ISHS Acta Horticulutrae 517.
Ref ID: 364
Keywords: conventional/flavanols/Fruit/helath/methods/mineral analysis/Phenols/quality/Taste
Reprint: In File

259. Willcox,J.K., G.L.Catignani, and S.Lazarus. 2003. Tomatoes and cardiovascular health. Crit Rev Food Sci Nutr. 43:1-18.
Ref ID: 58
Keywords: adverse effects/antioxidant/Antioxidants/Ascorbic Acid/beta Carotene/Biological Availability/blood/Blood Pressure/Cardiovascular Diseases/Carotenoids/chemistry/Cholesterol/Diet/Disease/etiology/flavonoid/Flavonoids/ Folic Acid/Food/Food Handling/Health/Heat/Human/In Vitro/lycopene/Lycopersicon esculentum/methods/Nutritive Value/pharmacokinetics/Platelet Aggregation/Potassium/prevention & control/Risk/therapeutic use/Tomato/Vitamin C/Vitamin E
Reprint: Not in File
Abstract: Diet is believed to play a complex role in the development of cardiovascular disease, the leading cause of death in the Western world. Tomatoes, the second most produced and consumed vegetable nationwide, are a rich source of lycopene, beta-carotene, folate, potassium, vitamin C, flavonoids, and vitamin E. The processing of tomatoes may significantly affect the bioavailability of these nutrients. Homogenization, heat treatment, and the incorporation of oil

in processed tomato products leads to increased lycopene bioavailability, while some of the same processes cause significant loss of other nutrients. Nutrient content is also affected by variety and maturity. Many of these nutrients may function individually, or in concert, to protect lipoproteins and vascular cells from oxidation, the most widely accepted theory for the genesis of atherosclerosis. This hypothesis has been supported by in vitro, limited in vivo, and many epidemiological studies that associate reduced cardiovascular risk with consumption of antioxidant-rich foods. Other cardioprotective functions provided by the nutrients in tomatoes may include the reduction of low-density lipoprotein (LDL) cholesterol, homocysteine, platelet aggregation, and blood pressure. Because tomatoes include several nutrients associated with theoretical or proven effects and are widely consumed year round, they may be considered a valuable component of a cardioprotective diet
Notes: DA - 20030217
IS - 1040-8398
LA - eng
PT - Journal Article
PT - Review
PT - Review, Tutorial
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 1406-18-4 (Vitamin E)
RN - 36-88-4 (Carotenoids)
RN - 50-81-7 (Ascorbic Acid)
RN - 502-65-8 (lycopene)
RN - 59-30-3 (Folic Acid)
SB - IM

260. Williams,D.E., N.J.Wareham, B.D.Cox, C.D.Byrne, C.N.Hales, and N.E.Day. 1999. Frequent salad vegetable consumption is associated with a reduction in the risk of diabetes mellitus. J Clin Epidemiol 52:329-335.
Ref ID: 757
Keywords: Adult/Aged/Body Mass Index/Cross-Sectional Studies/Diabetes Mellitus/Diabetes Mellitus,Type II/diagnosis/Diet/Diet Surveys/epidemiology/Female/Food/Fruit/Glucose/Glucose Tolerance Test/Great Britain/Health/Human/Logistic Models/Male/Middle Aged/Odds Ratio/Prevalence/prevention & control/Questionnaires/Risk/Seasons/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Abstract: This cross-sectional study was undertaken to investigate the association between the reported frequency of consumption of vegetables and fruits, the choice of staple carbohydrate, and glucose intolerance. One thousand one hundred twenty-two subjects aged 40-64 years in a population-based study underwent an oral glucose tolerance test, and their food consumption was assessed using a food-frequency questionnaire. The crude prevalence of undiagnosed non-insulin-dependent diabetes mellitus (NIDDM) was 4.5%, and that of impaired glucose tolerance (IGT) 16.8%. The age-standardized prevalence rates were 2.3 and 11.2%, respectively. Frequent consumption of vegetables throughout the year was inversely associated with the risk of having NIDDM (odds ratio [OR] = 0.16; 95% confidence interval [CI] = 0.04-0.69). This association was maintained after adjustment for age, gender, and family history. Vegetable consumption during the summer months had a much weaker inverse association with the risk of having NIDDM that failed to reach statistical significance. A nonsignificant inverse association between frequent consumption of fruits and NIDDM was observed. Frequent self-reported pasta and rice consumption was associated with a reduction in the risk of having IGT and NIDDM. (OR = 0.62, 95% CI = 0.44-0.87, and OR = 0.51, 95% CI = 0.27-0.99, respectively) but this relationship was not independent of age. Whether these associations reflect specific effects of particular nutrients or are a reflection of the patterning of lifestyle factors remains to be determined
Notes: DA - 19990526
IS - 0895-4356

LA - eng
PT - Journal Article
SB - IM

261. Williner,M.R., M.E.Pirovani, and D.R.Guemes. 2003. Ellagic acid content in strawberries of different cultivars and ripening stages. J Sci Food Agric 83:842-845.
Ref ID: 700
Keywords: cultivars/strawberries
Reprint: In File

262. Woese,K., D.Lange, C.Boess, and K.W.Bogl. 1997. A Comparison of Organically and Conventionally Grown Foods--Results of a Review of the Relevant Literature. J Sci Food Agric 74:281-293.
Ref ID: 637
Keywords: comparison
Reprint: Not in File

263. Wolfe,K., X.Wu, and R.H.Liu. 2003. Antioxidant activity of apple peels. J Agric Food Chem. 51:609-614.
Ref ID: 174
Keywords: analysis/Anthocyanins/Antioxidants/Catechin/Cell Division/chemistry/Diet/drug effects/Flavonoids/Fruit/Gallic Acid/Human/Liver Neoplasms/Malus/pathology/pharmacology/Phenols/Plant Extracts/Species Specificity/Tumor Cells,Cultured/Vegetables
Reprint: Not in File
Abstract: Consumption of fruits and vegetables has been shown to be effective in the prevention of chronic diseases. These benefits are often attributed to the high antioxidant content of some plant foods. Apples are commonly eaten and are large contributors of phenolic compounds in European and North American diets. The peels of apples, in particular, are high in phenolics. During applesauce and canned apple manufacture, the antioxidant-rich peels of apples are discarded. To determine if a useful source of antioxidants is being wasted, the phytochemical content, antioxidant activity, and antiproliferative activity of the peels of four varieties of apples (Rome Beauty, Idared, Cortland, and Golden Delicious) commonly used in applesauce production in New York state were investigated. The values of the peels were compared to those of the flesh and flesh + peel components of the apples. Within each variety, the total phenolic and flavonoid contents were highest in the peels, followed by the flesh + peel and the flesh. Idared and Rome Beauty apple peels had the highest total phenolic contents (588.9 +/- 83.2 and 500.2 +/- 13.7 mg of gallic acid equivalents/100 g of peels, respectively). Rome Beauty and Idared peels were also highest in flavonoids (306.1 +/- 6.7 and 303.2 +/- 41.5 mg of catechin equivalents/100 g of peels, respectively). Of the four varieties, Idared apple peels had the most anthocyanins, with 26.8 +/- 6.5 mg of cyanidin 3-glucoside equivalents/100 g of peels. The peels all had significantly higher total antioxidant activities than the flesh + peel and flesh of the apple varieties examined. Idared peels had the greatest antioxidant activity (312.2 +/- 9.8 micromol of vitamin C equivalents/g of peels). Apple peels were also shown to more effectively inhibit the growth of HepG(2) human liver cancer cells than the other apple components. Rome Beauty apple peels showed the most bioactivity, inhibiting cell proliferation by 50% at the low concentration of 12.4 +/- 0.4 mg of peels/mL. The high content of phenolic compounds, antioxidant activity, and antiproliferative activity of apple peels indicate that they may impart health benefits when consumed and should be regarded as a valuable source of antioxidants
Notes: DA - 20030122
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Anthocyanins)
RN - 0 (Antioxidants)
RN - 0 (Flavonoids)
RN - 0 (Phenols)

RN - 0 (Plant Extracts)
SB - IM

264. Wood,J.G., B.Rogina, S.Lavu, K.Howitz, S.L.Helfand, M.Tatar, and D.Sinclair. 2004. Sirtuin activators mimic caloric restriction and delay ageing in metazoans. Nature 430:686-689.
Ref ID: 1845
Keywords: Aging/agonists/Alleles/Animal Feed/Animals/Caenorhabditis elegans/Caloric Restriction/Drosophila melanogaster/drug effects/Families/Feeding Behavior/Female/Fertility/flavonoid/Flavonoids/genetics/Genotype/Human/Longevity/Male/metabolism/Mutation/pathology/pharmacology/Phenol/Phenols/physiology/polyphenols/resveratrol/Sirtuins/Stilbenes/Support,Non-U.S.Gov't/Support,U.S.Gov't,Non-P.H.S./Support,U.S.Gov't,P.H.S./Survival Rate/Time Factors
Reprint: Not in File
Abstract: Caloric restriction extends lifespan in numerous species. In the budding yeast Saccharomyces cerevisiae this effect requires Sir2 (ref. 1), a member of the sirtuin family of NAD+-dependent deacetylases. Sirtuin activating compounds (STACs) can promote the survival of human cells and extend the replicative lifespan of yeast. Here we show that resveratrol and other STACs activate sirtuins from Caenorhabditis elegans and Drosophila melanogaster, and extend the lifespan of these animals without reducing fecundity. Lifespan extension is dependent on functional Sir2, and is not observed when nutrients are restricted. Together these data indicate that STACs slow metazoan ageing by mechanisms that may be related to caloric restriction
Notes: DA - 20040805
IS - 1476-4687
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Stilbenes)
RN - 0 (polyphenols)
RN - 501-36-0 (resveratrol)
RN - 528-48-3 (fisetin)
RN - EC 3.5.1.- (Sirtuins)
SB - IM

265. Wu,X., G.R.Beecher, J.M.Holden, D.B.Haytowitz, S.E.Gebhardt, and R.L.Prior. 2004. Lipophilic and Hydrophilic Antioxidant Capacities of Common Foods in the United States. J Agric Food Chem. 52:4026-4037.
Ref ID: 669
Keywords: antioxidant/Food/United States
Reprint: In File

266. Yeh,C.T., andG.C.Yen. 2003. Effects of phenolic acids on human phenolsulfotransferases in relation to their antioxidant activity. J Agric Food Chem. 51:1474-1479.
Ref ID: 744
Keywords: Adult/antioxidant/Antioxidants/Arylsulfotransferase/blood/Blood Platelets/chemistry/Chlorogenic Acid/Chromans/Comparative Study/enzymology/Food/Gallic Acid/Health/Human/human health/Hydroxybenzoic Acids/ORAC/Oxygen/pharmacology/Phenols/Reactive Oxygen Species/Spectrometry,Fluorescence/Sulfotransferases/Support,Non-U.S.Gov't
Reprint: Not in File
Abstract: Sulfate conjugation by phenolsulfotransferase (PST) enzyme is an important process in the detoxification of xenobiotics and endogenous compounds. There are two forms of PST that are specific for the sulfation of small phenols (PST-P) and monoamines (PST-M). Phenoilc acids have been reported to have important biological and pharmacological properties and may have benefits to human health. In the present study, human platelets were used as a model to investigate the influence of 13 phenolic acids on human PST activity and to evaluate

the relationship to their antioxidant activity. The results showed that chlorogenic acid, syringic acid, protocatechuic acid, vanillic acid, sinapic acid, and caffeic acid significantly ($p < 0.05$) inhibited the activities of both forms of PST by 21-30% at a concentration of 6.7 microM. The activity of PST-P was enhanced ($p < 0.05$) by p-hydroxybenzoic acid, gallic acid, gentisic acid, o-coumaric acid, p-coumaric acid, and m-coumaric acid at a concentration of 6.7 microM, whereas the activity of PST-M was enhanced by gentisic acid, gallic acid, p-hydroxybenzoic acid, and ferulic acid. The phenolic acids exhibited antioxidant activity as determined by the oxygen radical absorbance capacity (ORAC) assay and Trolox equivalent antioxidant capacity (TEAC) assay, especially gallic acid, p-hydroxybenzoic acid, gentisic acid, and coumaric acid, which had strong activity. The overall effect of phenolic acids tested on the activity of PST-P and PST-M was well correlated to their antioxidant activity of ORAC value ($r = 0.71$, $p < 0.01$; and $r = 0.66$, $p < 0.01$). These observations suggest that antioxidant phenolic acids might alter sulfate conjugation
Notes: DA - 20030219
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Antioxidants)
RN - 0 (Chromans)
RN - 0 (Hydroxybenzoic Acids)
RN - 0 (Reactive Oxygen Species)
RN - 29656-58-4 (phenolic acid)
RN - 56305-04-5 (6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid)
RN - EC 2.8.2 (Sulfotransferases)
RN - EC 2.8.2.- (monoamine-sulfating phenol sulfotransferase)
RN - EC 2.8.2.1 (Arylsulfotransferase)
SB - IM

267. Yeung,F., J.E.Hoberg, C.S.Ramsey, M.D.Keller, D.R.Jones, R.A.Frye, and M.W.Mayo. 2004. Modulation of NF-kappaB-dependent transcription and cell survival by the SIRT1 deacetylase. EMBO J. 23:2369-2380.
Ref ID: 1854
Keywords: Apoptosis/Cell Survival/Families/genetics/resveratrol
Reprint: Not in File
Abstract: NF-kappaB is responsible for upregulating gene products that control cell survival. In this study, we demonstrate that SIRT1, a nicotinamide adenosine dinucleotide-dependent histone deacetylase, regulates the transcriptional activity of NF-kappaB. SIRT1, the mammalian ortholog of the yeast SIR2 (Silencing Information Regulator) and a member of the Sirtuin family, has been implicated in modulating transcriptional silencing and cell survival. SIRT1 physically interacts with the RelA/p65 subunit of NF-kappaB and inhibits transcription by deacetylating RelA/p65 at lysine 310. Treatment of cells with resveratrol, a small-molecule agonist of Sirtuin activity, potentiates chromatin-associated SIRT1 protein on the cIAP-2 promoter region, an effect that correlates with a loss of NF-kappaB-regulated gene expression and sensitization of cells to TNFalpha-induced apoptosis. While SIRT1 is capable of protecting cells from p53-induced apoptosis, our work provides evidence that SIRT1 activity augments apoptosis in response to TNFalpha by the ability of the deacetylase to inhibit the transactivation potential of the RelA/p65 protein
Notes: DA - 20040616
IS - 0261-4189
LA - eng
PT - Journal Article
SB - IM

268. Yeung,F., J.E.Hoberg, C.S.Ramsey, M.D.Keller, D.R.Jones, R.A.Frye, and M.W.Mayo. 2004. Modulation of NF-kappaB-dependent transcription and cell survival by the SIRT1 deacetylase. EMBO J 23:2369-2380.
Ref ID: 755

Keywords: Apoptosis/Cell Survival/genetics
Reprint: Not in File
Abstract: NF-kappaB is responsible for upregulating gene products that control cell survival. In this study, we demonstrate that SIRT1, a nicotinamide adenosine dinucleotide-dependent histone deacetylase, regulates the transcriptional activity of NF-kappaB. SIRT1, the mammalian ortholog of the yeast SIR2 (Silencing Information Regulator) and a member of the Sirtuin family, has been implicated in modulating transcriptional silencing and cell survival. SIRT1 physically interacts with the RelA/p65 subunit of NF-kappaB and inhibits transcription by deacetylating RelA/p65 at lysine 310. Treatment of cells with resveratrol, a small-molecule agonist of Sirtuin activity, potentiates chromatin-associated SIRT1 protein on the cIAP-2 promoter region, an effect that correlates with a loss of NF-kappaB-regulated gene expression and sensitization of cells to TNFalpha-induced apoptosis. While SIRT1 is capable of protecting cells from p53-induced apoptosis, our work provides evidence that SIRT1 activity augments apoptosis in response to TNFalpha by the ability of the deacetylase to inhibit the transactivation potential of the RelA/p65 protein
Notes: DA - 20040616
IS - 0261-4189
LA - eng
PT - Journal Article
SB - IM

269. Youdim,K.A., andJ.A.Joseph. 2001. A possible emerging role of phytochemicals in improving age-related neurological dysfunctions: a multiplicity of effects. Free Radic. Biol Med 30:583-594.
Ref ID: 373
Keywords: Aged/Aging/Agriculture/Alzheimer Disease/Animals/Ascorbic Acid/Brain/Capsicum/Carotenoids/chemistry/Dementia/drug therapy/Flavonoids/Fruit/Garlic/Ginkgo biloba/Health/Human/methods/Nervous System Diseases/Neurodegenerative Diseases/Oxidative Stress/Panax/Parkinson Disease/Phenols/physiopathology/Phytotherapy/Plants,Medicinal/Polymers/Tea/therapeutic use/United States/United States Department of Agriculture/Vegetables/Vitamin E
Reprint: Not in File
Abstract: It is rare to see a day pass in which we are not told through some popular medium that the population is becoming older. Along with this information comes the "new" revelation that as we enter the next millennium there will be increases in age-associated diseases (e.g., cancer, cardiovascular disease) including the most devastating of these, which involve the nervous system (e.g., Alzheimer's disease [AD] and Parkinson's disease [PD]). It is estimated that within the next 50 years approximately 30% of the population will be aged 65 years or older. Of those between 75 and 84 years of age, 6 million will exhibit some form of AD symptoms, and of those older than 85 years, over 12 million will have some form of dementia associated with AD. What appears more ominous is that many cognitive changes occur even in the absence of specific age-related neurodegenerative diseases. Common components thought to contribute to the manifestation of these disorders and normal age-related declines in brain performance are increased susceptibility to long-term effects of oxidative stress (OS) and inflammatory insults. Unless some means is found to reduce these age-related decrements in neuronal function, health care costs will continue to rise exponentially. Thus, it is extremely important to explore methods to retard or reverse age-related neuronal deficits as well as their subsequent, behavioral manifestations. Fortunately, the growth of knowledge in the biochemistry of cell viability has opened new avenues of research focused at identifying new therapeutic agents that could potentially disrupt the perpetual cycle of events involved in the decrements associated with these detrimental processes. In this regard, a new role in which certain dietary components may play important roles in alleviating certain disorders are beginning to receive increased attention, in particular those involving phytochemicals found in fruits and vegetables
Notes: DA - 20010411
IS - 0891-5849
LA - eng
PT - Journal Article

PT - Review
PT - Review, Tutorial
RN - 0 (Flavonoids)
RN - 0 (Phenols)
RN - 0 (Polymers)
RN - 0 (polyphenols)
RN - 1406-18-4 (Vitamin E)
RN - 36-88-4 (Carotenoids)
RN - 50-81-7 (Ascorbic Acid)
SB - IM

270. Youdim,K.A., J.P.Spencer, H.Schroeter, and C.Rice-Evans. 2002. Dietary flavonoids as potential neuroprotectants. Biol Chem. 383:503-519.
Ref ID: 259
Keywords: Aging/Animals/Beverages/Chronic Disease/Diet/drug effects/Flavonoids/Fruit/Health/Human/Memory/Neuroprotective Agents/Oxidative Stress/pharmacology/physiology/Support,Non-U.S.Gov't/Vegetables
Reprint: Not in File
Abstract: There is an increasing awareness of the role of certain nutritional components, including dietary flavonoids found in fruit, vegetables and beverages, in the maintenance of health and prevention of chronic diseases. In this regard, recent studies highlight an exciting role with respect to their potential neuroprotective actions, in particular towards deficits commonly observed with aging, such as reduced performance of cognitive, memory and learning tasks. These neurological functions, and possible mechanisms involved in controlling them, can be influenced by supplementation of single dietary flavonoids, or as part of a flavonoid-rich preparation. With this, a renewed emphasis is aimed at further understanding their modes and sites of action. Moreover a common theme among many in vitro studies examining mechanisms of neuroprotection is the failure to include biologically relevant metabolites of the flavonoids known to enter the circulation, and thus most likely to be bioavailable to cells and tissues. This oversight will ultimately influence the mechanisms of action proposed to explain the neuroprotection observed in animals and human studies. As such, emerging findings suggest a variety of potential mechanisms of action of flavonoids and their bioavailable metabolites in cytoprotection against oxidative stress, which may be independent of conventional antioxidant reducing activities. Such mechanisms might involve their interaction with cell signalling cascades, their influence on gene expression and the down regulation of pathways leading to cell death
Notes: DA - 20020529
IS - 1431-6730
LA - eng
PT - Journal Article
PT - Review
PT - Review, Academic
RN - 0 (Flavonoids)
RN - 0 (Neuroprotective Agents)
SB - IM

271. Zafrilla,P., F.Ferreres, and F.A.Tomas-Barberan. 2001. Effect of processing and storage on the antioxidant ellagic acid derivatives and flavonoids of red raspberry (Rubus idaeus) jams. J Agric Food Chem. 49:3651-3655.
Ref ID: 734
Keywords: analogs & derivatives/antioxidant/Chromatography,High Pressure Liquid/Ellagic Acid/flavonoid/Flavonoids/Food/Food Handling/Fruit/isolation & purification/metabolism/methods/phenolics/Quercetin/Spain/Support,Non-U.S.Gov't/Time Factors
Reprint: Not in File
Abstract: From red raspberries, ellagic acid, its 4-arabinoside, its 4' (4' '-acetyl) arabinoside, and its 4' (4' '-acetyl)xyloside, as well as quercetin and kaempferol 3-glucosides, were identified. In

addition, two unidentified ellagic acid derivatives were detected. The free radical scavenging activity of the ellagic acid derivatives was evaluated by using the DPPH method and compared to that of Trolox. All of the isolated compounds showed antioxidant activity. The effect of processing to obtain jams on raspberry phenolics was evaluated. The flavonol content decreased slightly with processing and more markedly during storage of the jams. The ellagic acid derivatives, with the exception of ellagic acid itself, remained quite stable with processing and during 6 months of jam storage. The content of free ellagic acid increased 3-fold during the storage period. The initial content (10 mg/kg of fresh weight of raspberries) increased 2-fold with processing, and it continued increasing up to 35 mg/kg after 1 month of storage of the jam. Then a slight decrease was observed until 6 months of storage had elapsed. The increase observed in ellagic acid could be explained by a release of ellagic acid from ellagitannins with the thermal treatment
Notes: DA - 20010821
IS - 0021-8561
LA - eng
PT - Journal Article
RN - 0 (Flavonoids)
RN - 476-66-4 (Ellagic Acid)
SB - IM

272. Zava,D.T., M.Blen, and G.Duwe. 1997. Estrogenic activity of natural and synthetic estrogens in human breast cancer cells in culture. Environ. Health Perspect. 105 Suppl 3:637-645.
Ref ID: 573
Keywords: Breast Neoplasms/Cell Division/Comparative Study/Ddt/Diet/drug effects/Environmental Health/Environmental Pollutants/Estradiol Congeners/Estrogens/Estrogens,Non-Steroidal/etiology/Female/Food/Food Analysis/Genistein/Human/In Vitro/Isoflavones/metabolism/Neoplasms,Hormone-Dependent/pathology/pharmacology/Plant Preparations/Receptors,Estrogen/Saliva/Spices/Support,U.S.Gov't,P.H.S./toxicity/Tumor Cells,Cultured
Reprint: Not in File
Abstract: We investigated the estrogenic activity of various environmental pollutants (xenobiotics), in particular the xenoestrogen o,p-DDT, and compared their effects with those of endogenous estrogens, phytoestrogens, and mycoestrogens on estrogen receptor binding capacity, induction of estrogen end products, and activation of cell proliferation in estrogen-sensitive human breast cancer cells in monolayer culture. We also quantified the levels of phytoestrogens in extracts of some common foods, herbs, and spices and in human saliva following consumption of a high phytoestrogen food source (soy milk) to compare phytoestrogen abundance and bioavailability relative to the reported xenoestrogen burden in humans. Results show that natural endogenous estrogens, phytoestrogens, mycoestrogens, and xenoestrogens bind estrogen receptor (ER) in intact cells, but demonstrate marked differences in their ability to induce end products of estrogen action and to regulate cell proliferation. All of the different classes of estrogens stimulated cell proliferation at concentrations that half-saturated ER, but only some classes were able to induce estrogen-regulated end products. Genistein, a common phytoestrogen found in soy foods, differed from the xenoestrogen DDT in its effects on cell proliferation and ability to induce estrogen-regulated end products. Moreover, we found that many of the foods, herbs, and spices commonly consumed by humans contain significant amounts of phytoestrogens, and consumption of soy milk, a phytoestrogen-rich food, markedly increases the levels of phytoestrogens in saliva. In conclusion, our in vitro results predict that a diet high in phytoestrogens would significantly reduce the binding of weak xenoestrogens to ER in target tissues in vivo
Notes: DA - 19970811
IS - 0091-6765
LA - eng
PT - Journal Article
RN - 0 (Environmental Pollutants)
RN - 0 (Estradiol Congeners)

RN - 0 (Estrogens)
RN - 0 (Estrogens, Non-Steroidal)
RN - 0 (Isoflavones)
RN - 0 (Plant Preparations)
RN - 0 (Receptors, Estrogen)
RN - 0 (phytoestrogens)
RN - 50-29-3 (DDT)
RN - 789-02-6 (o,p'-DDT)
SB - IM

273. Zhang,J., S.Jiang, and R.R.Watson. 2001. Antioxidant Supplementation Prevents Oxidation and Inflammatory Responses Induced by Sidstream Cigarette Smoke in Old Mice. Environmental Health Perspectives 109:1007-1009.
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