THE EFFECT OF THE ADMINISTRATION OF A WHEY PROTEIN ISOLATE (WPI) AND COLLAGEN HYDROLYSATES ON ETHANOL-INDUCED ULCERATIVE LESIONS WAS STUDIED IN RATS. WPI AND BOVINE OR PORCINE COLLAGEN HYDROLYSATE (BCH AND PCH, RESPECTIVELY) WERE GIVEN TO RATS BY GAGGAGE. IN ACUTE EXPERIMENTS, (SINGLE-DOSE) PHYSIOLOGICAL SALINE (10 ml/kg OF BODY WEIGHT) WAS USED AS THE NEGATIVE CONTROL, AND CARBENOXOLONE (200 mg/kg OF BODY WEIGHT) WAS USED AS A POSITIVE CONTROL. ETHANOL (1 ml/250-g RAT) WAS ALSO GIVEN BY GAGGAGE. THESE TREATMENTS REDUCED THE ULCERATIVE LESION INDEX (ULI) IN A RANGE OF 40-77%, DEPENDING ON THE DOSAGE. SOME MIXTURES OF WPI WITH EITHER PCH OR BCH PROVIDED RESULTS THAT SUGGESTED SYNERGIZMS BETWEEN WPI AND THE COLLAGEN HYDROLYSATES.

APPLICATIONS

FOR EXAMPLE, WPI/BCH (IN THE PROPORTION OF 375:375 mg/kg OF BODY WEIGHT) DECREASED ULI BY 64%. THE MECHANISM FOR MUCOSAL PROTECTION INVOLVED A DECREASE IN PLASMA GASTRIN (~40%), A SIGNIFICANT INCREASE (50-267%) IN MUCUS PRODUCTION AND A REDUCTION IN ULI (PERCENTAGE) WHEN INTRAGASTRICAL ADMINISTRATIONS WERE PERFORMED AFTER IN VIVO ALKYLATION BY N-ETHYLMALEIMIDE. RESULTS SUGGEST THAT GASTRIN, SULFHYDRL SUBSTANCES, AND SOME MECHANISMS RELATED TO MUCOSAL PRODUCTION ARE ALL INVOLVED IN GASTRIC ULCER PROTECTION AGAINST ETHANOL.

BEVERAGES

(INCL. JUICES, TEA/COFFEE, YOGHURT AND OTHER NATURAL SOFT DRINKS)

NPARR 1(2), 2010-0149, Determination of nutritional and toxic elements in pasteurized bovine milk from Vale do Paraiba region (Brazil)

Throughout the year of 2004, 54 samples (1 l each) were collected from commercial sources in the Vale do Paraiba region (eastern portion of São Paulo State, Brazil). The concentrations of (Ca, Cr, Cu, Fe, Mg, Mn, Ni, Se, Zn, Cd and Pb) in these samples were analyzed by two atomic-absorption spectroscopy (AAS) methods. Ca, Cu, Fe, Mg and Zn were determined by flame atomic-absorption spectroscopy (FAAS) and (Cd, Cr, Mn, Ni, Pb and Se) were determined by electrothermal atomic-absorption spectroscopy (ETAAS). Tests to determine and quantify essential, non-essential and toxic elements present in bovine milk are rare in Brazil, especially so for Vale do Paraiba region. Tests were performed on standard NIST-certified milk powder to validate the reliability of subsequently collected analytical data. Ca presented a lower recovery value (85.3%). The finding for Ca macro-nutrient was found to be below recommended international standards (1300 mg/l) for all samples possibly due to milk heterogeneity and losses in the pasteurization process. Significant results for Pb were found in all milk samples with average values at 0.230 mg/l from a minimum of 0.062 mg/l and maximum of 0.476 mg/l [Vanessa A. Soares, Mahyara M.M. Kus, André Luis C Peixoto*, Juliana S. Carrocci, Rodrigo F.S. Salazar and Hélcio J. Izário Filho (Department of Chemical Engineering, Engineering School of Lorena, Universidade de São Paulo, Estrada Municipal do Campinho, s/n°, CEP 12602-810, Lorena, SP, Brazil), Food Control, 2010, 21(1), 45-49].
Dietary supplementation with pressurized whey in patients with cystic fibrosis

Cystic fibrosis (CF) is characterized by malnutrition, chronic pulmonary inflammation, and oxidative stress. Whey protein is rich in sulfhydryl groups and is recognized for its ability to increase glutathione and reduce oxidative stress. Previously, we have shown that supplementation with whey increased intracellular glutathione levels in patients with CF. We have subsequently shown that hyperbaric pressure treatment of whey protein promotes the release of novel peptides for absorption, increases intracellular glutathione in healthy subjects, and reduces in vitro production of interleukin (IL)-8. We hypothesized that pressurized whey supplementation in children and adults with CF could have significant nutritional and anti-inflammatory benefits. A pilot open-label study of 1-month dietary supplementation with pressurized whey in CF patients was undertaken to assess the effects. Twenty-seven patients with CF (nine children, 18 adults) were enrolled. The dose of pressurized whey was 20g/day in patients less than 18 years of age and 40g/day in older patients. Anthropometric measures, pulmonary function, serum C-reactive protein (CRP), whole blood glutathione, and whole blood IL-8 and IL-6 responses to phytohemagglutinin (PHA) stimulation were measured at baseline and at 1 month. Three adults withdrew (one with gastrointestinal side effects, two with acute infection). Both children and adults showed enhancements in nutritional status, as assessed by body mass index. Children showed improvement in lung function (forced expiratory volume in 1 second). The majority of patients with an initially elevated CRP showed a decrease. PHA-stimulated IL-8 responses tended to decrease in the adults. Whole blood glutathione levels did not change. Thus, oral supplementation with pressurized whey improves nutritional status and can have additional beneficial effects on inflammation in patients with CF [L.C. Lands®, M. Iskandar, N. Beaudoin, B. Meehan, N. Dauletbaev, Y. Berthiame, (Division of Pediatric Respiratory Medicine, Montreal Children’s Hospital-McGill University Health Centre, Room D380, 2300 Tupper Street, Montreal, QC, Canada H3H 1P3), Journal of Medicinal Food, 2010, 13(1), 83-90].

Evaluation of antioxidant activity and genotoxicity of alcoholic and aqueous beverages and pomace derived from ripe fruits of Cyphomandra betacea Sendt.

Cyphomandra betacea Sendt. ripe fruits can be a source of value-added byproducts and products such as antioxidant supplements, ingredients for food processing or alternative medical products. The aims of the present study were to obtain different preparations of C. betacea fruits, such as juice, decoction and maceration and to characterize them in terms of microbiological stability, sensorial and chemical parameters, antioxidant potential (DPPH and ABTS•+ radical scavenging, â-carotene bleaching, nitrite scavenging activities), capacity to prevent oxidative stress-induced cell death, and genotoxicity. The best antioxidant activity was found in C. betacea fruit maceration, probably as a consequence of the high flavonoid and anthocyanin content. Nevertheless, all preparations analyzed proved to be good as free radical scavengers (SC_{50} values between 1.88 and 44 ìg/ml) and exerted protection against â-carotene oxidation. Total phenolic compounds and flavonoids showed a better correlation than anthocyanins with the free radical scavenging effect of the assayed foods. The insoluble matters (pomace) obtained after juice preparation showed antioxidant activity by quenching free radicals. Furthermore, 3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium (MTT) reduction assay showed that C. betacea preparations prevent oxidative stress-induced cell death in HepG2 cells in a dose-dependent manner. Salmonella microsome assays show no mutagenic effect. The data presented in this study demonstrate that C. betacea ripe fruits, aqueous and ethanolic preparations and pomace may be a good source of antioxidant compounds in nutraceutical or functional-food products [Roxana M Ordez, Mar a Luz Cardozo, Iris Catiana Zampini and Mar a In s Isla®(Universidad Nacional de Tucum n, Ayacucho 471, 4000 San Miguel de Tucum n, Argentina), Journal of Agricultural Food Chemistry, 2010, 58(1), 331-337].
NPARR 1(2), 2010-0153, Evaluation of different teas against starch digestibility by mammalian glycosidases

Current work investigated the ability of different tea (green, oolong and black teas) in inhibiting human salivary α-amylase (HSA) and mammalian α-glucosidase (AGH). The inhibitory profiles were correlated to their major polyphenol content (theaflavins and catechins). The fully fermented black tea was demonstrated to be most potent in inhibiting HSA and AGH (IC₅₀ of 0.42 to 0.67 and 0.56 to 0.58 mg of tea leaves/ml, respectively). Its capability in retarding the digestion of a real food system (rice noodle) was further elucidated with an in vitro digestion study. Results indicated that black tea was able to retard starch digestion moderately, thereby allowing a gradual reduction of sugar liberation. Polyphenolic profile analysis suggested that the oxidized catechins, theaflavins, may be responsible for its activity.

Refractive index (RI) measurement is a rapid, direct and highly convenient method for quantifying the degree of enzymatic starch digestion and kinetics. The RI method has good linearity range, limit of detection (0.1596 mg/ml, maltose equivalent) and limit of quantitation (0.6312 mg/ml) and was successfully applied in our study [Lee Wah Koh, Lin Ling Wong, Ying Yan Loo, Stefan Kasapis and Dejian Huang* (Department of Chemistry, National University of Singapore, 3 Science Drive 3, Singapore 117543, Republic of Singapore), Journal of Agricultural Food Chemistry, 2010, 58(1), 148-154].

NPARR 1(2), 2010-0154, Effect of probiotic Lactobacillus casei Zhang on fermentation characteristics of set yogurt

The effect of four inoculation levels of Lactobacillus casei Zhang (0.001, 0.01, 0.1 and 1.0g/100g) on the fermentation characteristics of set-style yogurt and the changes in viable counts of lactic acid bacteria, pH value, syneresis, apparent viscosity, sugar and organic acid contents were determined during fermentation and storage over 21 days. The presence of 0.001 to 0.01 g/100g L. casei Zhang did not affect the growth of the yogurt strains and the yogurt inoculated with 0.001g/100g of L. casei Zhang had the highest apparent viscosity among the samples. However, a high inoculated level of L. casei Zhang (1.0g/100g) resulted in yogurts with inferior quality [Jicheng Wang, Zhuang Guo, Qing Zhang, Liya Yan, Yongfu Chen, Xia Chen, Xiao-Ming Liu, Wei Chen and He-Ping Zhang* (Key Laboratory of Dairy Biotechnology and Engineering, Ministry of Education, Inner Mongolia Agricultural University, Huhhot, Inner Mongolia 010018), International Journal of Dairy Technology, 2010, 63(1), 105-112].

NPARR 1(2), 2010-0155, Identification of yeasts from raw milk and selection for some specific antioxidant properties

Eleven different species of yeasts isolated from raw milk, such as Issatchenkia orientalis, Pichia fermentans, Rhodotorula mucilaginosa and Yarrowia lipolytica were identified using an integrated approach, including phenotypic and genotypic methods and the API 20C AUX system. Eleven selected strains which tolerated low pH levels, gastric juice and bile salt were further analysed for the presence of functional traits useful for probiotic application as antioxidants. The ability to scavenge DPPH (2, 2-diphenyl-1-picrylhydrazyl) and inhibit linoleic acid peroxidation indicated that P. fermentans BY5 and HJ15 may be promising candidate strains for use as probiotics with antioxidant activity [Li-Shui Chen, Ying Ma*, Jean-Louis Maubois, Li-Jun Chen, Qiao-Hong Liu and Ji-Ping Guo (School of Food Science and Engineering, Harbin Institute of Technology, Harbin, 150090), International Journal of Dairy Technology, 2010, 63(1), 47-54].

NPARR 1(2), 2010-0156, Experimental evidence for the protective effects of coffee against liver fibrosis in SD rats

Coffee is one of the most commonly consumed beverages worldwide. Accumulating clinical evidence has shown an inverse relationship between coffee and liver cirrhosis. Protective effect of coffee against liver fibrosis and underlying molecular mechanisms using a dimethylnitrosamine (DMN)-induced liver fibrosis model has been investigated. Coffee administration significantly prevented the deterioration of body weight, organ weight and serum biochemistry by DMN treatment. Histopathological examination revealed that necrosis/inflammation and fibrotic septa decreased significantly in cof-
fee-treated rats compared to those treated with DMN and water. Coffee administration also significantly inhibited the accumulation of hydroxyproline (P<0.001) and the production of malondialdehyde (P<0.05), as well as stellate cell activation caused by DMN injection. Coffee protected the depletion of glutathione, superoxide dismutase and catalase in liver tissue. In addition, coffee treatment inhibited the gene expression of inducible nitric oxide synthase, transforming growth factor (TGF)-β, tumor necrosis factor-α, interleukin-1 and platelet-derived growth factor (PDGF)-β in liver tissues and lowered the concentration of TGF-β and PDGF-β in liver. Coffee inhibited NO production by macrophages. Thus coffee exerts protective effects against liver fibrosis via antioxidant action and the suppression of fibrogenic cytokines, TGF-β and PDGF-β in liver.

increase in skin thickness and a reduction in skin elasticity induced by chronic UVB exposure. It also prevented the formation of wrinkles and melanin (at 1000mg/kg, twice daily) as well as increases in the diameter and length of skin blood vessels and in the expression of matrix metalloproteinase-2 (MMP-2). Prevention of UVB-induced skin aging by turmeric may be due to the inhibition of increases in MMP-2 expression caused by chronic irradiation [Maho Sumiyoshi and Yoshiyuki Kimura* (Division of Functional Histology, Department of Functional Biomedicine, Graduate School of Medicine, Ehime University, Toon City, Ehime 791-0295, Japan), Phytomedicine, 2009, 16(12), 1137-1143].

NPARR 1(2), 2010-0158, Skin photoprotection by natural polyphenols: anti-inflammatory, antioxidant and DNA repair mechanisms

Epidemiological, clinical and laboratory studies have implicated solar ultraviolet (UV) radiation in various skin diseases including, premature aging of the skin and melanoma and non-melanoma skin cancers. Chronic UV radiation exposure-induced skin diseases or skin disorders are caused by the excessive induction of inflammation, oxidative stress and DNA damage, etc. The use of chemopreventive agents, such as plant polyphenols, to inhibit these events in UV-exposed skin is gaining attention. Chemoprevention refers to the use of agents that can inhibit, reverse or retard the process of these harmful events in the UV-exposed skin. A wide variety of polyphenols or phytochemicals, most of which are dietary supplements, have been reported to possess substantial skin photoprotective effects. This review article summarizes the photoprotective effects of some selected polyphenols, such as green tea polyphenols, grape seed proanthocyanidins, resveratrol, silymarin and genistein, on UV-induced skin inflammation, oxidative stress and DNA damage, etc., with a focus on mechanisms underlying the photoprotective effects of these polyphenols. The laboratory studies conducted in animal models suggest that these polyphenols have the ability to protect the skin from the adverse effects of UV radiation, including the risk of skin cancers. It is suggested that polyphenols may favorably supplement...