VEGETABLES


Soups based on cauliflower soup powders, prepared by dry mixing of ingredients and rapeseed oil, showed a decrease in quality, as evaluated by a sensory panel, during the storage of the soup powder in the dark for up to 12 weeks under mildly accelerated conditions of 40 °C and 75% relative humidity. Antioxidant, shown to be effective in protecting the rapeseed bulk oil, used for the powder preparation, had no effect on storage stability of the soup powder. The freshly prepared soup powder had a relatively high concentration of free radicals, as measured by electron spin resonance spectroscopy, which decreased during storage, and most remarkably during the first two weeks of storage, with only marginal increase in lipid hydroperoxides as primary lipid oxidation products, and without any increase in secondary lipid oxidation products. Analyses of volatiles by SPME-GC–MS revealed a significant increase in concentrations of 2-methyl- and 3-methyl butanals, related to Maillard reactions, together with an increase in 2-acetylpyrrole concentration. The soup powders became more brown during storage, as indicated by a decreasing Hunter L-value, in accord with non-enzymatic browning reactions. A significant increase in the concentrations of dimethyl disulfide in soup powder headspace indicated free radical-initiated protein oxidation. Protein degradation, including Maillard reactions and protein oxidation, is concluded to be more important than lipid oxidation in determining the shelf-life of dry cauliflower soup powder [Riikka Raitio, Vibeke Orlien and Leif H. Skibsted* (University of Copenhagen, Department of Food Science, Faculty of Life Sciences, Rolighedsvej 30, DK-1930 Frederiksberg C, Denmark), Food Chemistry, 2011, 128(2), 371-379].

NPARR 2(4), 2011-0454, Changes in carotenoids during processing and storage of pumpkin puree

Changes in the contents of carotenoids and their true retentions (% TR) during the production of puree of Cucurbita moschata ‘Menina Brasileira’ and of Cucurbita maxima ‘Exposição’ pumpkins and the stability of such compounds during 180 days of storage were monitored by liquid chromatography coupled with a photodiode array detector. Cooking caused higher losses than commercial sterilisation. High losses of xanthophylls such as lutein and violaxanthin were noted during processing and storage of pumpkin puree. Such losses show the low stability of these compounds. The major carotenoids, pro-vitamin A carotenes, namely, α-carotene and all-trans-β-carotene for C. moschata ‘Menina Brasileira’ and all-trans-β-carotene for C. maxima ‘Exposição’ obtained high retentions (>75%) after processing. A slight degree of isomerisation of β-carotene was noted in the puree samples, but with low concentrations of cis-isomers. Storage for 180 days did not significantly affect (P < 0.05) the concentrations of these carotenoids [João Gustavo Provesi, Carolinne Odebrecht Dias and Edna Regina Amante* (Federal University of Santa Catarina, Department of Food Science and Technology, Laboratory of Fruits and Vegetables, Rodovia Admar Gonzaga 1.346, 88034-001 Florianopolis, SC, Brazil), Food Chemistry, 2011, 128(1), 195-202].

NPARR 2(4), 2011-0455, Nutritional and medicinal potential of Lagenaria siceraria

Dietary prebiotics and phytomedicine have made available novel therapeutic possibilities to manage human health and diseases. Sitotherapy, the therapeutic use of diet and nutrition, strives to adapt the chemistry of food and nutrition in order to improve human health. Gastrointestinal crypt stem cells and enteric microflora are believed to be affected by diet, which can result in improved health. Lagenaria siceraria (Molina) Standl. is a vegetable food also used as a traditional medicine. It is reported to have immunomodulatory, hepatoprotective, cardioprotective, antioxidant, anti-stress and adaptogenic, antihyperlipidemic, analgesic, and anti-inflammatory properties. A novel protein, Lagenin (20 kDa), isolated from seeds is reported to have antitumor, antiviral, antiproliferative, and anti-HIV activities. The consumption of bottle gourd can be considered to improve human health, but additional research is required [Ahmad, I., Irshad, M and Rizvi, M.M.A. * (Department of Biosciences, Jamia Millia Islamia (Central University), Jamia Nagar, New Delhi 110025, India), International Journal of Vegetable Science, 2011, 17(2), 157-170].
NPARR 2(4), 2011-0456, Comparison of wines from grape and a mix of beetroot and carrot

Wine is one of the oldest forms of alcoholic beverages and can impart benefits to human beings. Beetroot (Beta vulgaris L) and carrot (Daucus carota L) are rich in betalain and carotene. These vegetables have medicinal and nutritive properties. Yeast (Saccharomyces cerevisiae INVScl) was used to prepare wine from beetroot and carrot and its quality was compared to grape wine. The vegetable wine was reddish-brown in color, slightly acidic (titratable acidity=1.0 ± 0.02 g tartaric acid/100 mL), sweet (3.1 ± 0.07 g of reducing sugar/100 mL), and with an alcohol content of 10.6 ± 0.8%. No major differences in biochemical aspects of the wine were found. Organoleptic analysis indicated that the vegetable wine was preferred over the grape wine for taste and color/appearance. The taste was a significant criteria ($\chi^2 =36.46; P < 0.01$) in selection of the vegetable wine as the superior product [Kempraj, V.* and Dasgupta, D. (Department of Biochemistry, The Institute of Science, #15, Madame Cama Road, Mumbai 400 032, India), International Journal of Vegetable Science, 2011, 17(2), 171-176].

NPARR 2(4), 2011-0457, Nutritional and sensory quality of micronutrient-rich traditional products incorporated with green leafy vegetables

The study was aimed to formulate micronutrient rich products with dried greens. 'Keerae' (Amaranthus paniculatus) and 'shepu' (Peucedanum graveolens) greens were steam blanched after chemical pretreatment and dried in hot air oven. Dried greens were analyzed for proximate constituents, vitamins, minerals, antinutrients and dialyzable minerals. Dehydrated greens were incorporated into 'Mathri'-a wheat flour based deep fried product and 'Thalipeeth'-a mixed cereal based shallow fried product at 4, 8 and 12 % levels. The products were evaluated for sensory quality in comparison to control (without greens) by an untrained panel numbering 80. Analysis of chemical composition showed no significant losses in proximate, mineral and antinutrient contents of dehydrated greens. Results of sensory analysis revealed that products incorporated with 4% dehydrated greens were similar to control in texture, taste and overall quality. However, acceptability scores reduced with increasing concentration of greens. Addition of dehydrated greens increased nutrient density of all products [Gupta, S.* and Prakash, J. (Department of Studies in Food Science and Nutrition, University of Mysore, Manasagangotri, Mysore-570 006, India), International Food Research Journal, 2011, 18(2)].

NPARR 2(4), 2011-0458, Provitamin-A and xanthophyll carotenoids in vegetables and food grains of nutritional and medicinal importance

This study reports carotenoid composition of vegetables (n = 56), cereals (n = 12), pulses and legumes (n = 12), analysed by HPLC. It was hypothesised that food grains, like vegetables may be good sources of carotenoids. Amongst vegetables, higher level (mg/100 g dry weight) of lutein (210-419) was detected in green/red/capsicum and yellow zucchini, whilst zeaxanthin was dominant in kenaf (4.59). β-Carotene (mg/100 g dry weight) was higher in green capsicum and kenaf (48,159) whilst carrot, ivy gourd and green capsicum contain α-carotene (22-110). Amongst food grains, chickpea, split red gram and flaxseed contain higher levels (µg/100 g dry weight) of lutein (185-200) whilst zeaxanthin level was highest in puffed chickpea (1.8). Red unpolished parboiled rice was richest (µg/100 g dry weight) in β-carotene (67.6) whilst whole black gram contained higher levels of α-carotene (52.7). Thus, results indicate that chickpea and red unpolished parboiled rice are good sources of carotenoids. These carotenoid-rich vegetables and grains may be exploited to meet the lutein and β-carotene requirement [Mamatha, B.S., Sangeetha, R.K. and Baskaran, V.* (Department of Biochemistry and Nutrition, Central Food Technological Research Institute, CSIR, Mysore 570 020, Karnataka, India), International Journal of Food Science and Technology , 2011, 46(2), 315-323].

NPARR 2(4), 2011-0459, Vegetable and fruit peels as a novel source of antioxidants

Consumers are currently demanding less use of chemicals or minimally processed fruits and vegetables, so more attention had been paid to search for naturally occurring substances. This is particularly true for plant materials that act as alternative antioxidant sources. From this point of view, the present study was designed to evaluate the antioxidant
potential of seven fruit and vegetable peels from India. Extraction was done individually by cold percolation method using various organic solvents (hexane, chloroform, acetone and methanol). Quantitative phytochemical analysis was done for total phenol and flavonoid content. Antioxidant testing assays were 2,2-diphenyl-1-picryl-hydrazyl (DPPH) free radical scavenging assay, hydroxyl radical scavenging assay, superoxide anion radical scavenging assay and reducing capacity assessment. Amongst the seven plant peels, the acetone extract of Mangifera indica was the most potent and in some cases even better than the standard. The results obtained indicate that M. indica peel may become important as a cheap and noticeable natural source of compounds with health protective potential, which can be used in pharmaceutical, nutraceutical and food preparation [Kalpna, R., Mital, K., Sumitra, C*.(Phytochemical, Pharmacological and Microbiological Laboratory, Department of Biosciences, Saurashtra University, Rajkot-360 005, Gujarat, India), Journal of Medicinal Plant Research, 2011, 5(1), 63-71].