**FRUITS**

*NPARR* 4(1), 2013-036  **Pomegranate: A fruit that ameliorates metabolic syndrome (Review)**

Pomegranate is an ancient fruit that is still part of the diet in the Mediterranean area, the Middle East, and India. Health-promoting effects have long been attributed to this fruit. Modern research corroborates the use of pomegranate as a folk remedy for diabetes and metabolic syndrome, and is responsible for a new evaluation of nutritional and pharmaceutical aspects of pomegranate in the general public. In the last decade, industry and agricultural production have been adapted to meet higher market demands for pomegranate. *In vivo* and *in vitro* studies have demonstrated that pomegranate exerts hypoglycaemic effects, including increased insulin sensitivity, inhibition of $\alpha$-glucosidase, and impact on glucose transporter type 4 function, but is also responsible for a reduction of total cholesterol, and the improvement of blood lipid profiles, as well as anti-inflammatory effects through the modulation of peroxisome proliferator-activated receptor pathways. These effects may also explain how pomegranate-derived compounds function in the amelioration of adverse health effects caused by metabolic syndrome. Pomegranate contains polyphenols such as ellagitannins and anthocyanins, as well as phenolic acids, fatty acids and a variety of volatile compounds. Ellagitannins are some of the most prevalent compounds present in pomegranate and may be responsible for certain benevolent characteristics associated with pomegranate. A brief overview of rising health problems due to obesity will be provided, followed by characterisation of the biological activity, bioavailability and safety of pomegranate and pomegranate-derived compounds. Although the fruit is consumed in many countries, epidemiological and clinical studies are unavailable. Additional research is necessary to corroborate the promise of current in vivo and *in vitro* findings [Medjakovic, S., and Jungbauer, A. (Department of Biotechnology, Christian-Doppler-Laboratory of Receptor Biotechnology, University of Natural Resources and Life Sciences Vienna, Muthgasse 18, 1190 Vienna, Austria), *Food and Function*, 2013, 4(1), 19-39].

*NPARR* 4(1), 2013-037  **Effect of different packaging materials and storage intervals on physical and biochemical characteristics of pear**

The fruits of semi-soft pear (*Pyrus communis*) cv. Punjab Beauty harvested at physiologically mature stage in 3rd week of July were packed in corrugated fiberboard boxes (CFB) with low density polyethylene (LDPE) liners, CFB with high density polyethylene (HDPE) liners, crates with LDPE liners, crates with HDPE liners, CFB, crates and wooden boxes and stored in walk-in-cool chamber at 0-1 °C and 90-95% RH. The fruits were analyzed after 30, 45, 60 and 75 days for physiological loss in weight (PLW), fruit firmness, core browning, spoilage, total soluble solids (TSS), juice acidity and sensory quality. The PLW was maximum in crates while the spoilage was maximum in fruits packed in wooden boxes. Core browning was more in fruits packed in crates and CFB boxes with HDPE liners while minimum was in fruits packed in CFB boxes. However, core browning did not occur up to 45 days of storage in any of the package. Fruits packed in CFB boxes with HDPE liners effectively reduced the weight loss, spoilage and retained acceptable firmness up to 75 days of storage with maximum edible quality. TSS and sugars were maximum in fruits packed in wooden boxes while the acidity was maximum in CFB boxes with HDPE liners. The fruits in CFB boxes with HDPE liners maintained the perfect balance between sugars and acids up to 75 days of storage [Kaur, K.*, Dhillon, W.S., and Mahajan, B.V.C. (Department of Horticulture, Punjab Agricultural University, Ludhiana 141 004 Punjab, India), *Journal of Food Science and Technology*, 2013, 50(1), 147-152].
FRUITS

NPARR 4(1), 2013-038 Formulation and acceptability of foam mat dried seabuckthorn (Hippophae salicifolia) leather

Technology for utilization of seabuckthorn berries for preparation of fruit leather/bar was optimized by modifying the foam mat drying technique. The conversion of seabuckthorn juice/pulp into foam was standardized by whipping the pulp after addition of CMC @ 0-3% at 5 °C and drying the resultant foam in dehydrator (55±2 °C) to a moisture content of about 12-14%. The fruit bar prepared from sulphited juice/pulp wrapped in a butter paper followed by packing in polyethylene pouches (20 g) and stored at ambient temperature (14.6-26.1 °C) experienced least changes in quality attributes like ascorbic acid (1045.7 mg/100 g vs 997.5 mg/100 g) and carotenoids (80.4 mg/100 g vs 72.3 mg/100 g) as compared to the leather made from the unsulphited pulp. Storage studies indicate that fruit bars are mildly hygroscopic (0.46-0.65) and can be stored within the RH of 46-65% at room temperature [Kaushal, M.*, Sharma, P.C. and Sharma, R. (Department of Postharvest Technology, Dr YS Parmar University of Horticulture and Forestry, Nauni Solan 1732 30 HP, India) , Journal of Food Science and Technology, 2013, 50(1), 78-85].

NPARR 4(1), 2013-039 Drying characteristics of wild apricot (Prunus armeniaca) fruit bar and economic evaluation of market potential of the enterprise

An experiment was conducted to study the drying characteristics of wild apricot (Prunus armeniaca L.) fruit bar and evaluation of the economic feasibility of the enterprise. Wild apricot fruits were harvested at optimum maturity from Distt Tehri-Garhwal, Uttarakhand and after thorough sorting and proper washing, used for hot extraction of pulp through a pulper. Pulp was preserved in 500 ppm SO₂. Wild apricot fruit bar was prepared by pre-standardized recipe using wild apricot pulp + 60 % sugar + 0.30 % pectin and drying the mixture in a mechanical dehydrator at 55 ± 2°C for 6 hours. Dried fruit bar sheets were cut into rectangular shapes (1.0×1.5 in²) using a stainless steel knife and wrapped in polythene paper. Results on the drying rate indicate that for preparation of fruit bar we can dry the mixture of pulp, sugar and pectin within six hours in a mechanical dehydrator after boiling for 20 min over the flame. It was also observed that most of the moisture loss occurs during the process of heating / boiling over the flame and the product stabilizes and sets into a bar during mechanical dehydration with only small percentage of moisture loss. The mass balance thus indicates that about 9.11 kg of wild apricot fruit bar is obtained from 10 kg of pulp. The economic indicators such as B/C (3.55), PBP (1.68 years), IRR (55.4%) revealed the sound financial position of wild apricot fruit bar production unit and hence existing (fruit processing unit) as well as potential entrepreneurs in various hill states of India including Uttarakhand, Himachal Pradesh, Jammu and Kashmir etc. can enter into this venture [Sharma, S.K*, Chaudhary, S.P., Dixit, A.K., Rao, V.K., Yadav, V.K and Bisht, T.S. (G B Pant University of Agriculture and Technology Hill Campus, Ranichauri, Tehri Garhwal, Uttarakhand 249 199, India), Indian Journal of Agricultural Sciences, 2013, 83(3), 321-325].

NPARR 4(1), 2013-040 Enhancing shelf life of litchi (Litchi chinensis) fruit through integrated approach of surface coating and gamma irradiation

India and China account for 91% of the world's litchi (Litchi chinensis) production. Although India is the second largest producer of litchi, its contribution to export is insignificant. Litchi being non-climacteric fruit possesses poor shelf life and fruit quality declines rapidly after harvest. Present investigation was an attempt to enhance shelf life of litchi fruit var. rose scented with integrated treatments of 1% NaCl solution, 2% wax solution and gamma radiation. Out of all,
1% NaCl coated+irradiated samples, proved out to be the best with enhanced shelf life of 24 days at 4°C (shelf life at ambient temperature without any treatment being 3-4 days). Various biochemical parameters were tested and organoleptic evaluation was done to judge the acceptability of the stored litchi samples. TSS, vitamin C, total & reducing sugar content was found in range of 14.17-15.42°Bx; 35.67-57.88. mg/100 gm pulp weight, 12.44-14.06% and 9.41-11.91%. Organoleptic evaluation for different parameters ranged from 5.92 to 7.72 (fair-good) at 24th day of storage. Radiation dose of 1 kGy was found to be the only effective dose in which enhanced shelf life was achieved without any deterioration of various quality attributes [Pandey, N.*, Joshi, S.K., Singh, C.P., Kumar, S., Rajput, S. and Khandal, R.K. (Department of Entomology, G. B. Pant University of Agriculture and Technology, Pantnagar, U.S. Nagar, Uttarakhand, India), *Radiation Physics and Chemistry*, 2013, **85**, 197-203].