Preparation and storage of Dillenia fruit squash

The trees of ***Dillenia indica* Linn.**, Hindi – *Chalta* are found in the evergreen forests of the sub-Himalayan tract from Kumaon and Garhwal eastwards to Assam and West Bengal and in many parts of South India. In Assam ripe fruits are collected for their sepals which are sour in taste and widely used in flavouring curries and in the preparation of jam and jelly. The acid juice sweetened with sugar is used as a cooling drink. Since the tree is very common in North-East India, commercial production of its beverage and squash can be taken up. Preparation of squash and its quality changes during storage have been studied by Saikia and Saikia at Assam Agricultural University. During the experiment, fruits were collected after 160 days of fruit set at optimum maturity levels i.e. when fruits develop dusky yellow colour. After cleaning in water and air drying, squashes were prepared by three methods mentioned here :

Method A: Small washed pieces (2 kg) of fruits were cooked with water (1 litre) under pressure of 7 kg for 15 minutes, cooled by removing the lid of the cooker. Sugar (1 kg), citric acid (30 g), benzoic acid (2.5 g) and yellow colour 2 drops were added. Measured quantity of juice was finally found to be about 1 litre.

Method B: Extraction of juice was similar to the method A but sugar taken was 800 g and citric acid 20 g.

Method C: Pulp (500 ml) was mixed with equal quantity of tap water filtered through muslin cloth and then sugar 600 g, citric acid 10 g; potassium metabisulphite 0.1% and salt 3 g were added. The prepared squashes were kept in glass bottles and stored for 60 days.

Authors concluded that ***Dillenia*** fruits can be successfully utilized for preparation of squash. Method A was found to be the best from biochemical as well as organoleptic point of view. However, method B can also be used. Colour, taste and astringency scores were also found to be better under method A and B in comparison to method C (Saikia & Saikia, *J Food Sci Technol*, 2002, **39**, 149-151).

Debittering of Indian Grape fruit juice

In recent years consumption of fruit juice has increased due to diversion of peoples' interest in natural products. Seeing the increasing cost of fruits like orange, grapes and *Mosambi*, exploration of other fruit juices has become necessary. Due to bitterness the juice of Indian Grape fruit, ***Citrus paradisi* Macf.** is consumed with little acceptance. Prakash and his team at Department of Chemical Technology, Mumbai studied the use of enzyme naringinase for debittering the Indian Grape fruit juice. Studies revealed that the enzymic debittering using a commercial naringinase preparation reduced 75% of naringin content at an enzyme level of 1.0 g/l and incubation at 40°C for 4 hours. Further, debittering by naringinase has no adverse effect on nutritional quality of the juice (Prakash *et al*, *J Sci Food Agric*, 2002, **82**, 394-397).

Red grape juice is better for health

In humans, oxidative modification of low-density lipoproteins (LDL) is recognized as an important step in the initiation of atherogenetic plaque formation, which is a primary determinant for development for cardiovascular disease and coronary thrombosis. Protection of LDL against oxidation therefore, appears important for prevention of atherosclerotic cardiovascular disease.

Epidemiological surveys have shown a relationship between the consumption of fruits, wine, vegetables and tea, and reduced incidence and mortality rates from coronary heart disease. There is also epidemiological evidence that flavonoid intake is inversely related to coronary heart disease mortality. On this basis, the hunt for physiologically beneficial antioxidants have in recent years been focussed on evaluating antioxidant activities of flavonoids and other phenolic substances found in plant based foods and beverages. Much of this research has been targeted at identifying dietary components capable of retarding *in vitro* lipid peroxidation of human LDL.

Grapes are among the fruits containing the highest content of phenolic substances. Phenolic substances in wine exert strong antioxidant activity on lipid peroxidation of human LDL *in vitro* and this effect may account for an important part of the cardioprotective effect of red wine consumption. During making of wine, phenolic substances undergo hydrolytic and oxidative changes that could result in particularly active phenolic antioxidants. The phenolic compounds

occurring in red wine, grapes and grape juice include flavonoids, notably flavan-3-ols (catechins and procyanidins), anthocyanins, and flavonols as well as nonflavonoid compounds such as hydroxycinnamic acids, hydroxybenzoic acids and stilbenes.

On this background Landbo and Meyer from Denmark investigated the antioxidant properties of European grape juices on *in vitro* lipid peroxidation of human LDL and looked into the relationship between the phenolic composition and antioxidant potency of juices. The influence of ascorbic acid addition on antioxidant activity of grape juices was also studied since ascorbic acid is widely used as a stabilizing antioxidant additive in fruit juices.

Antioxidant activities of red and white European grape juices towards copper induced lipid oxidation of human LDL were examined *in vitro*. Red grape juice concentrate inhibited lipid peroxidation of LDL by prolonging the lag phase by 2-7 times relative to a control when evaluated at a total phenolic concentration of 10 μM gallic acid equivalents (GAE). Red grape juices tested blocked lipid peroxidation of LDL at 20 μM GAE. 5μM ascorbic acid alone did not exert antioxidant activity towards LDL, but combinations of 5μM ascorbic acid with 5μM GAE juice phenols eliminated the pro-oxidant activity of white grape juice, and significantly improved the antioxidant activities of red grape juices [Landbo & Meyer, *Int J Food Sci Technol*, 2001, **36**(7), 727-735].

High-pressure *treatment for preserving* Orange juice

Orange juice is an important source of antioxidant carotenoids. The carotenoids are known to give protection against heart disease and cancer owing to their free radical scavenging properties. Fresh juice is not always available hence the maintenance of the vital constituents in preserved juice is very essential. Begona de Ancos and others at Plant Foods Science and Technology Department, Instituto del Frio, Madrid, Spain studied the effect of high-pressure treatment on the orange juice carotenoids and nutritional and health-related values.

The high-pressure treatment performed at 350 Mpa at 30°C for 5 minutes showed the presence of highest amount of antioxidant carotenoid (6.70 mg/l) in the juice. Hence high-pressure treatment could be adopted for preserving orange juice for up to 30 days with good nutritional and sensory quality (Ancos *et al*, *J Sci Food Agric*, 2002, **82**, 790-796).