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Blended Nectar of Custard Apple - A Novel Processed Product to Address Nutritional Food Security

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Abstract

Custard apple or Sitaphal (*Annona squamosa* L.) is a deciduous tree having yellowish-green fruit. The fruits are highly perishable but nutritionally rich and delicious. The fruits are harvested for a short period of time during pre-winter. Due to bumper harvest in a short period and perishable nature of fruits, the farmers are compelled to sell their produce at a lower price. Post-harvest processing is not yet suitably standardised. Rapid softening of fruits and marketing is a major problem. The shelf-life of custard apple fruit can be increased upto 12 days if stored at 10 °C, whereas the extracted pulp can be stored for six months with potassium meta-bisulphite. Many value-added products like ready-to-serve beverages, fermented beverage, ice cream, squash, and toffee can be prepared to exploit the nutritional potential and adding a new flavour/ taste. Therefore this paper attempts to outline post-harvest, processing value addition and storage of these fruits.

Introduction

Custard apple (*Annona squamosa* L.) is the most favourite minor tropical fruit in India. It is also known as 'Sitaphal'. 'Sweetsop', 'sugar apple' etc. is considered as one of the most delicious and nutritionally valuable fruit. It is generally eaten fresh after ripening. Being rich in nutritional and medicinal properties it is regarded as the 'New Super Fruit of the 21st Century.' The edible portion of the fruit is soft, creamy and granular pulp having a good blend of sweetness and acidity. It can be used for weight gain as considered as high-calorie fruit. The 100 g ripe pulp contains carbohydrates (20.0-25.2 g), protein (1.5 g), calcium (17.6-27 mg), phosphorus (14.7-32.1 mg), iron (0.42-1.14 mg), and sufficient vitamins such as carotene (0.007-0.018 mg), thiamine (0.075-0.119 mg), riboflavin (0.086-0.175 mg), niacin (0.53-1.19 mg), ascorbic acid (15.0-44.4 mg) and nicotinic acid (0.5 mg). The fruits have very limited post-harvest shelf-life due to their perishable nature. In India, more than 20-22 percent of fruits are spoiled before consumption due to poor post-harvest handling infrastructure and lack of processing opportunities. The custard apple pulp us used in ice-cream industry, confectionary and some milk products. Due to its perishable nature and short shelf life, the development of novel processed products from the custard apple is required to address nutritional security to consumers, minimise post-harvest losses and better returns to growers. Custard apple is a seasonal and highly perishable fruit which has 3-5 days shelf life period.

So, the suitable post-harvest technology should be developed to extend the shelf life. Custard apple fruit pulp has got many food applications as flavour enhancing ingredient and fruit-based ready to drink fruit beverages. Suitable extraction of pulp and its preservation help for better utilisation of custard

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apple. The custard apple has good acceptability in various value-added products viz. ice cream, toffee, milkshake, juices, jellies and compotes, ready to serve beverage, jam and nectar etc. Nectar is prepared from the pulp and therefore blending becomes the best way of the utilisation of these fruits so that the final product has better nutritional and sensory attributes. Custard apple fruit, valued for its medicinal and health benefits, can be a right candidate for making acceptable nectar beverage blends with various other fruits which adds more value in the form of flavour and nutrient composition.

Extraction and Purification of the Juice

Uniformly matured and ripened custard apple fruitswere collected from the local markets. The damaged or decayed fruits were rejected. These fruits were washed thoroughly with clean water to remove dirt and dust particles. Then peeling was done manually by hand. The pulp from custard apple fruits was extracted by halving the fruits, scooping the pulp and passing it through the pulper machine to get fine and homogenised pulp free from seeds. Soon after extraction, the pulp was treated with Sulphur dioxide by adding 700 ppm of potassium metabisulphite, packed in zip lock polyethylene bags and stored in a deep freezer at a temperature of -18 °C. The fruits of Nagpur, Kinnow mandarins and strawberry were peeled manually and the juice was extracted using screw type juice extractor while lime juice was extracted from fruits by using lime juice squeezer. These juices were used fresh to prepare blended nectar.

Calculation of Quantity of Sugar, Citric Acid and Water

To find out quantity of sugar, TSS of pulp was measured. Then, the required quantity of sugar was calculated to obtain the desired TSS (%) in nectar. Similarly, to find out quantity of citric acid requirement, the acidity of pulp was measured. Then, the required quantity of citric acid was calculated to obtain the desired acidity (%) in nectar. Quantity of water was calculated by the following formula (Srivastava and Kumar, 2007). Quantity of water required (litre) = quantity of finished product (litre) – quantity of ingredient used [juice (l) + sugar kg) + acid (kg)].

Preparation of Nectar

The calculated amount of sugar and citric acid was added in water and slightly heated so as to dissolve the sugar and citric acid. The syrup was cooled and strained through a muslin cloth. Then, the measured quantity of blended pulp/ juice was mixed with syrup and the mixture was homogenised properly. The prepared nectar was filled in cleaned and sterilised glass bottles of 200 ml capacity. The filled bottles were crown corked by a sterilised crown cork with the help of a crown corking machine. The corked bottles were pasteurised at about 90 °C for 25-30 minutes in an open water bath. The bottles of nectars were kept at ambient temperature for three months storage period. A flow chart for the preparation of blended nectar is produced in Figure 1.

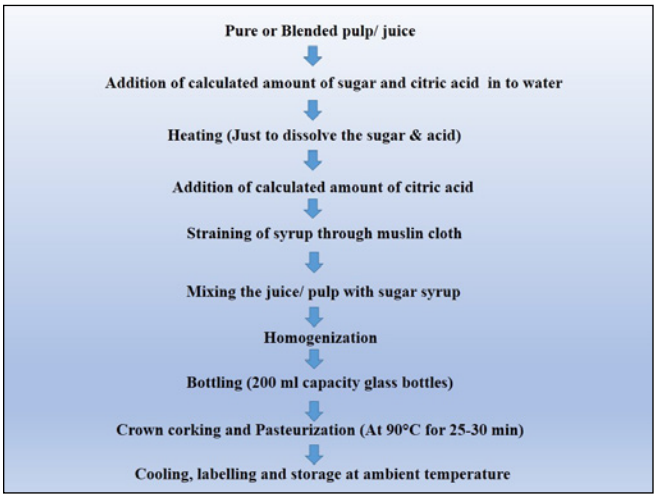

Figure 1: Flow chart for the preparation of blended necta

Conclusion

The custard apple nectar is a potent functional drink and the best example of adding value to a perishable fruit. This delicious and nutrient-rich drink has tremendous potential to add new dimensions to the income-earning pattern to custard apple growers and industries engaged in fruit processing. The custard apple growers are now realising the commercial significance of this proceeds juice which helps them for getting better income. However, in the many parts of the country, custard apple processing is still not exploited to its full potential. Farmers' awareness, favourable institutional policies and government support can enable in popularising this technology for mass adoption by the farming community, thereby enabling in sustainable and inclusive agricultural development.

References

Singh, S., Godara, R.K., Saini, R.S., Sharma, J.R., 2005. Standardisation of processing technology for bael/ blended bael (*Aegle marmelos*) ready-to-serve beverage. *Haryana Journal of Horticultural Sciences*, 34(3/4): 263-265.

Srivastava, R.P., Kumar, S., 2007. Fruits and vegetables preservation-principles and practices, Edn 3, International Book Distribution Company.