



VALUE ADDED PRODUCTS FROM CASHEW APPLE - AN ALTERNATE NUTRITIONAL SOURCE

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ABSTRACT

Cashew apple is a fairly large spreading and fast growing tree that is native to Brazil. The tree also produces a two-piece fruit, one part called the Cashew Apple and one being the Cashew Nut. The cashew apple is pear shaped and has nutritional and medicinal effect. It contains more vitamin C than citrus. Various value added products such as juice, fenny, wine, dried cashew apple, syrup and jam can be prepared from cashew apple.

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INTRODUCTION

Cashew apple (*Anacardium occidentale L.*) is not a true fruit, but swollen peduncle to which the nut is attached and widely grown in tropical areas. The name *Anacardium* refers to the shape of the fruit, which looks like an inverted heart (*ana* means "upwards" and *-cardium* means "heart"). India is at the top in list of the countries regarding the maximum area utilized in production of cashew. India ranks first in the production of cashew and contributes 4.6 lakhs tons per annum. The major states in India in which cashew are cultivated are Kerala, Karnataka, Goa, Maharashtra, Tamil Nadu, Andhra Pradesh, Orissa, and West Bengal. The cashew apple is between three and five inches long and has a smooth, shiny skin that turns from green to bright red, orange or yellow in colour as it matures. It is rich in Vitamin C and contains four to five times as much Vitamin C as citrus. The cashew apple is also contains sugars and considerable amounts of tannins and minerals, mainly calcium, iron and phosphorous. Cashew apple, though very juicy and sweet, is not normally consumed because of its astringent and acrid anacardol and anacardic acid. The phenolic compounds present in apple are mostly responsible for astringency of the juice. The nutritive value of cashew apple is given in Table.1

Harvesting

The fruit is hand picked to avoid bruising the delicate flesh, carefully washed and the nuts are manually detached from the fruit and processed separately.

While the cashew apples should be processed within two to three hours of picking, since they undergo rapid deterioration when kept for a longer time. Cashew apples are sorted and mature, undamaged, sound one are selected for the processing.

Processing of cashew apple

Cashew juice

Cashew juice is highly perishable when fresh, often spoiling within a day after being extracted. The juice contains a fair amount of tannin, which has detrimental role in physiological functions in human body. The cashew juice processing is given in Fig.1. Sound cashew apple can be used for the juice extraction. The juice can be extracted with screw press, basket press or simple hand pressing; juice is strained through muslin cloth which is clarified by adding 1.4 gm of PVP (Poly Vinyl Pyrrolidone) per liter of juice. Juice is boiled with sugar and cooled. 0.8% sodium benzoate is added as a preservative. The mixture should be poured into well sterilized bottles, cork air tight with crown cork and store in a cool dry place. The astringent properties of the cashew apple are removed by clarification and the clarification agents are cassava starch, rice gruel, gelatin powder, gelatin, PVP.

Cashew fenny

Fenny is Goan flavoured liquor made from the juice of the cashew apple. Recently Cashew Fenny got its GI registration as a specialty alcoholic beverage from Goa. Traditionally the cashew apples are manually crushed by a rock and juice is collected in a huge earthen pot, which is

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buried in the ground. The juice is then distilled in earthen or big copper pots. When the cashew apples are crushed, the pulp is arranged in the shape of a cake in the coimbi and tied with a string. A huge boulder is then placed on top of it. The final quota of juice which trickles out in a clean form is called Nero, it helps bowel movement and provides relief from constipation.

Table. 1 Nutritive value of fresh cashew apple

Constituents	per 100 g of fresh cashew apple
Moisture	84.4-88.7 g
Protein	0.101-0.162 g
Fat	0.05-0.50 g
Carbohydrates	9.08-9.75 g
Fiber	0.4-1.0 g
Ash	0.19-0.34 g
Calcium	0.9-5.4 mg
Phosphorus	6.1-21.4 mg
Iron	0.19-0.71 mg
Carotene	0.03-0.742 mg
Thiamine	0.023-0.03 mg
Riboflavin	0.13-0.4 mg
Niacin	0.13-0.539 mg
Ascorbic Acid	146.6-372.0 mg

The juice is then boiled and the concentrated liquid collects in the smaller pot, the pressure in the receiver is kept in check by pouring cold water on it, frequently with a wooden ladle. The first stage of processing may be done with higher temperature but the later stage of distillation has to be done with lower temperature to keep the pressure and heat under control. The process of distilling fenny takes about 8 hours. The liquor produced from cashew is of three grades Urrac, Cazulo and fenny. The Urrac is the light product of first distillation. Its strength ranges between 14 and 16 grao. The Cazulo is moderately strong product of second distillation. The product, which we get after the process of third distillation, is called fenny. Its strength ranges between 20 and 24 grao. It has a long shelf life. Juice is extracted from cashew apples and toddy and it is fermented till formation of a film floating over the juice. Time required for fermentation is 65-70 hours. Around 70 ltrs. of arrack is distilled from 100 ltrs. of fermented juice. Arrack and fermented juice are distilled in the ratio of 1:2 to obtain fenny. In fenny, alcohol content ranges from 40-45%. The Process Flow Chart is shown in Fig.2

Cashew wine

Cashew wine is made in many countries throughout Asia and Latin America. It is a light yellow alcoholic drink, with an alcohol content of 6-12 %. Cashew apples are cut into slices and are crushed in the juice press. The fruit juice is sterilized in stainless steel pans at a temperature of 85°C in order to eliminate wild yeast. The juice is filtered and treated with either sodium or potassium metabisulphite, to destroy or inhibit the growth of undesirable types of micro-organisms such as acetic acid bacteria, wild yeast and mould. The inoculum is added for fermentation. The stabilized and filtered wine is stored in a bottle (Fig. 3).

Dried cashew fruit

Cashew fruit is not readily consumed in the raw state because of its high content of astringent compounds. Boiling with salt

for 5 min removed astringent compounds and it can be converted into a useful dried product. The fruit must therefore be extensively processed prior to drying. The processing flow chart is shown in Fig.4

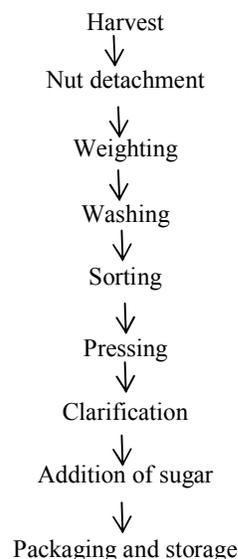


Fig.1. Process flow chart for processing of cashew apple juice

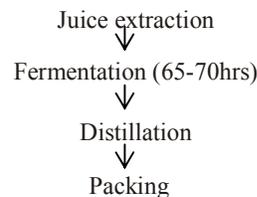


Fig. 2. Process flow chart for production of fenny

Cashew syrup

Extraction of juice and removal of astringency are done in the same way as in the pretreatment of juice. Sugar is added at the rate of 1 to 1.25 kg for every litre of juice 20-25g citric acid per litre and 0.08% as sodium benzoate is added to the juice and thoroughly mixed for 4-5 hour and clear syrup is cooled and filled in bottles. The process flow chart for cashew apple syrup is given in Fig. 5.

Cashew apple jam

Cashew apple is thoroughly cleaned by washing with water. The apple is immersed in 3% salt solution for three days to reduce the tannin content, after which the fruits are steamed for 15 to 20 minutes at 0.7 to 1.05 kg steam pressure. Then the apples are crushed and mixed with sugar and boiled. A pinch of citric acid is added towards the end of the cooling process to improve the taste. Finally it is stored well in sterilized jam bottles. The processing flow chart is shown in Fig.6.

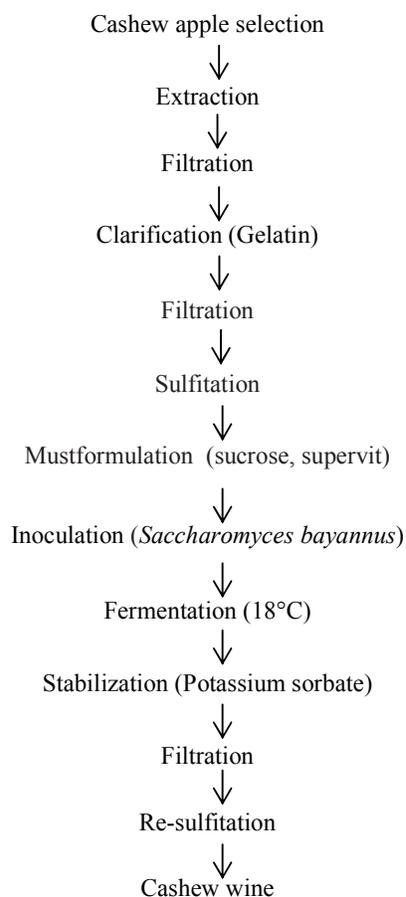


Fig. 3. Processing of cashew apple wine

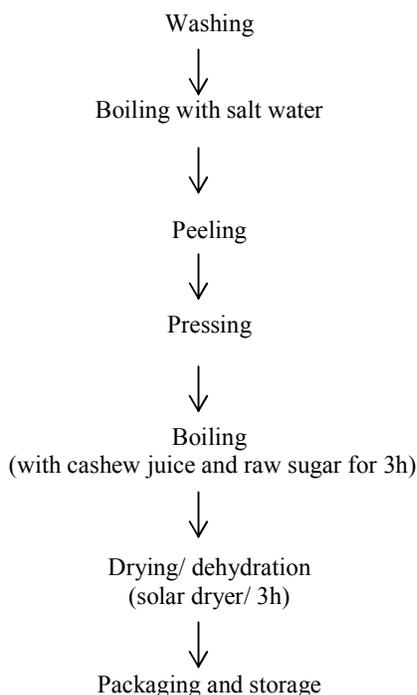


Fig. 4. Processing of dried cashew fruit

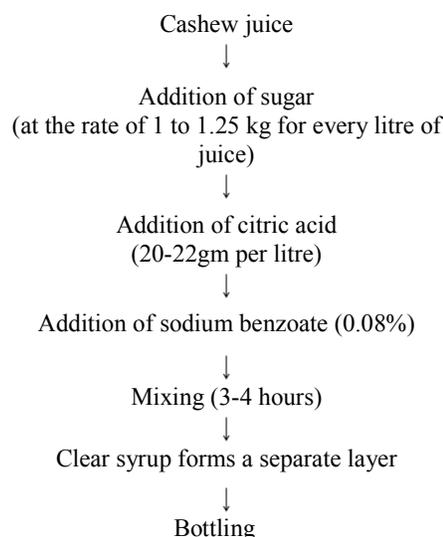


Fig. 5. Processing of cashew apple syrup

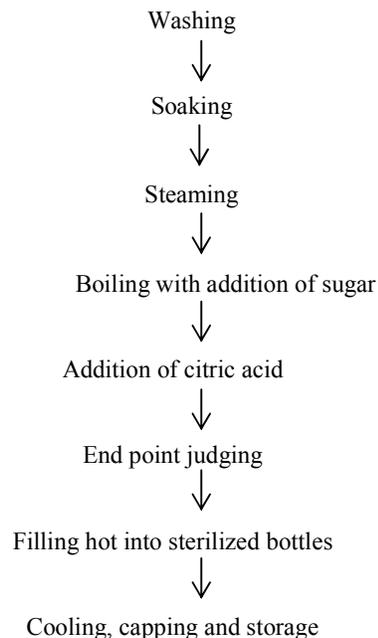


Fig.6. Processing of cashew apple jam

Conclusion

Cashew apple juice, being the highly nutritious food product that it is, merits closer attention because of its health obvious benefits and its economic potential for farmers, entrepreneurs and consumers. Furthermore, the fruit has medicinal properties. It is used for curing scurvy and diarrhoea, and it is effective in preventing cholera. Hence the value added products from cashew apple is a thirst area of research for food technologist, industrialist and farmers and of course these products are a definite alternate solution for nutritional source.

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