

De-tanning of cashew apple juice

Tannins present in cashew apple are responsible for astringency of the juice (3 to 5 mg/ml). It binds with proteins and minerals and interferes with their assimilation in the body, resulting in a nutritional deficiency. Tannin reduction has a vital role to make cashew apple juice palatable like other fruits.

- ***De-tannification using bio-products***

Bio-products available in nature are the cheapest and safest source of detannification. Cassava starch is readily available and effectively reduces tannin at the rate of 39.8%, but requires more than 8 hr for clarification which leads to fermentation. Hence, refrigeration with clarification is recommended in this method to avoid fermentation. Rice gruel is a rapid (20 to 40 min) and effective clarifying agent but the quantity of gruel to be added at the rate of 1:2 (Juice: Gruel) leads to dilution of fruit juice and alter the taste. Some recently identified de-tanning agents such as defatted soybean meal, dried potato starch and bajra starch (rich in starch and iron) were tested for their efficiency in tannin reduction at ICAR-Directorate of Cashew Research, Puttur and found to be more efficient to reduce tannin at the rate of 34.3%, 28.6% and 24.0%, respectively.

- ***De-tannification using chemicals***

Poly vinyl pyrrolidone (PVP) is one of the most effective chemicals that precipitates tannin in cashew apple juice (34 to 35%). But PVP is very expensive and not readily available in the market. Gelatin powder is the most common and readily available de-tanning agent (35 to 36%). It works well even within the range of 3 to 10g for one litre of cashew apple juice. Enzymes like tannase can also be used as best tannin precipitant but its sourcing and affordability is a dispute.

- ***Steaming and blanching***

These are the integral operations in processing for the inactivation of enzymes and sterilization of apple surface. Steaming of cashew apples (0.4 N/m²) for 5 to 15 min or boiling in salt water (40 to 50°C) for 15 min reduces the tannin content in cashew apples.

- ***Microfiltration***

This method is also in practice but requires tedious pre-treatments like the use of clarifying agents prior to filtration and is expensive as well.



Packaging and transportation

Selection of ripe, firm and undamaged apples plays a vital role in deciding the quality of processed products. Cashew apples should be plucked from the tree or the picked apples should be firm enough and free from spoilage to develop edible products. These apples are advised to reach processing units within 24 hours of collection. If the nuts are separated from apples, the shelf life of fresh apple is reduced to six hours. In India, cashew apples are transported in cardboard boxes.