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Effect of clarification on physical-chemical properties and nutrient retention of pressed and blended cashew apple juice

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Abstract

The cashew apple is a nutritious pseudo fruit of the cashew tree, after the nut. It is highly perishable and has an astringency taste, which both hinder its utilisation. This study was designed to optimise the clarification of cashew apple juice (CAJ) using gelatine, and assess the effect of clarification on physical-chemical properties and nutrient retention of pressed and blended CAJ. Pressed and blended CAJ was treated with gelatine concentrations (0, 0.025, 0.05, 0.1, 0.2, 0.3 and 0.4 g L⁻¹) at room temperature for 1, 2, 4, 6, 8, 10 and 12 h. Both clarified and un-clarified juice were analysed for tannin, total phenol, β -carotene, vitamin C, sugar, minerals, physical-chemical qualities (titratable acidity, total soluble solids, pH), and antioxidant activity. The results showed that tannin was optimally reduced from 217.6 mg/100 ml TAE to 24.6 mg/100 ml TAE for pressed CAJ, and from 258.0 mg/100 ml TAE to 55.0 mg/100 ml TAE for blended CAJ, using 0.2 g of gelatine in a liter of juice, for two hours at room temperature (24–26°C). Blended and pressed CAJ with and without clarification showed no significant difference in pH, total soluble solids, and titratable acidity, $p < 0.05$. However, blended CAJ had higher contents of total phenol, β -carotene, vitamin C, sugar, potassium, calcium, zinc, iron, phosphorus, and antioxidant activities $p < 0.05$, while pressed CAJ had a higher magnesium content at $p < 0.05$. The use of a low concentration of gelatine in a liter of either blended or pressed CAJ yielded high quality and less astringent CAJ. Though both juices exhibited high nutrient contents, blended CAJ presents more nutritional benefits than the pressed. The technology performed well at room temperature and therefore can be disseminated for use in households, small-medium scale juice processors in low resource settings.

Keywords: Cashew apple juice, clarification, gelatine, pressing and blending, tannin