ABSTRACT

Effect of Processing Method on Shelf Stability of Coconut Water

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The production of shelf stable coconut water has long interested food processors, and within the last few years the regional and international markets for fresh coconut water have grown tremendously. The effect of different processing methods on the shelf life of refrigerated coconut water at 2°C was investigated. Processing methods included pasteurization, microfiltration and/or UV sterilization. The primary objective was to extend the refrigerated life of the bottled product to a minimum of one month.

Water from green coconut, harvested at the age of approximately seven months (with no or very little jelly), was extracted, quickly chilled and coarse filtered through muslin cloth to remove solids and particulate material. The water was then clarified with polyvinylpyrrolidone (PVPP), with and without added ascorbic acid and then further processing using pasteurization, microfiltration and/or UV sterilization. The bottled product was stored under refrigeration (2°C) for shelf life studies. Analyses included changes in pH, turbidity, total soluble solids, total plate counts, yeasts and moulds and coliforms for microbial load and organoleptic testing.

Findings revealed that shelf life of the refrigerated bottled product can be extended to a month or beyond by using pasteurization method of processing. The natural flavour and colour of coconut water was retained after processing. Sensory evaluation

showed that the taste and odour of coconut water prepared by pasteurization without the addition of ascorbic acid and PVPP were consumer acceptable after one month on storage at 2°C ($P \leq 0.05$). The use of microfiltration and/or UV sterilization was not successful in achieving a product lasting more than seven days. To maintain the quality of the processed coconut water, quality control and plant hygiene are of paramount importance to the success of the coconut water processing operations.

The method of processing will increase the competitiveness of coconut water especially in the 'sports beverage' market within the Caribbean region, and the small farmers and processors will benefit from the extended shelf life of bottled coconut water.

Keywords: Coconut water, filtration, ascorbic acid, polyvinylpyrrolidone, pasteurization, UV radiation, refrigeration, shelf life.