

A PRELIMINARY STUDY TOWARDS DEVELOPMENT OF A FERMENTED COCONUT WATER BEVERAGE

S.A. Suriyaarachchi and K.N. Samarasekera*

Department of Botany, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.

*kaumadi@sjp.ac.lk

Coconut water is a nutrient-rich natural beverage with significant potential in the functional beverage market. Although abundant in Sri Lanka, it remains underutilised in value-added applications. Due to its natural sugar content, minerals, and bioactive compounds, coconut water serves as an ideal substrate for fermentation. This study developed a new fermented coconut water beverage using commercial yeast, which is also known as baker's yeast (*Saccharomyces cerevisiae*) as the starter culture, with and without added table sugar, to enhance its nutritional value and ensure microbiological safety and shelf life. Fresh coconut water obtained from 8-month-old coconuts was used to produce three different fermented coconut water products: coconut water product; coconut water and 1% (v/v) commercial yeast product; and coconut water, 1% (v/v) commercial yeast, and 5% (w/v) added sugar product. Triplicates were prepared for each product. All fermentation products were incubated at room temperature with constant shaking at 120 rpm. The fermentation process was monitored daily by measuring changes in pH and Brix values. The coconut water alone required nine days to complete fermentation. In contrast, coconut water inoculated with yeast fermented within three days, while coconut water supplemented with both yeast and sugar took seven days to complete fermentation. At the end of fermentation, viable yeast and lactic acid bacteria counts were determined, along with nutritional parameters such as vitamin C and protein, and the alcohol content of each product. Based on nutritional values and other parameters mentioned above, the best product was the coconut water with the commercial yeast product. It had a final pH of 5.05 ± 0.02 , a Brix value of (1.90 ± 0.06) °Bx, viable yeast count of $(5.60 \pm 0.57) \times 10^{11}$ CFU mL⁻¹, viable lactic acid bacteria count of $(2.45 \pm 0.25) \times 10^7$ CFU mL⁻¹, (20.90 ± 0.28) mg per 100 mL vitamin C, (1001.73 ± 3.08) µg mL⁻¹ protein, and $(4.40 \pm 0.14)\%$ alcohol. The selected product showed no *Escherichia coli* growth. Shelf-life testing revealed ongoing fermentation under refrigeration, indicating the need for preservatives. This study demonstrates that fresh coconut water obtained from 8-month-old coconuts can be transformed into a safe and nutritious fermented beverage.

Keywords: Commercial yeast, Fermented coconut water, Functional beverage, Microbiological safety, Nutritional enhancement