

Development of Seaweed Based Ready-to-Serve (RTS) Beverage using Elkhorn Sea Moss: *Kappaphycus alvarezii* - A Novel Approach in Value Addition to Seaweed Resources in Sri Lanka

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In Sri Lanka, the development of seaweed-based food products such as nutritious drinks still gained less attention. This study was focused on the identification of product processing potential with appropriate production technology for the RTS beverage using common red algae: *Kappaphycus alvarezii* having high culture potential in Sri Lanka. Preliminary trials were conducted to identify the composition of raw materials and ingredients for the development of RTS products. Then, final experiments were followed using 3 levels of *Kappaphycus* extracts (15, 20, and 25%) blended with 5% fresh lime juice. Final products were subjected to pasteurization at 90 °C for 5 min and stored at room temperature. The selected final product was analyzed for organoleptic parameters, proximate composition, and keeping quality characters. Results indicated the production potential of value-added RTS beverage using red algae. Final treatment with 20% of *K. alvarezii* recorded as the best product with the highest consumer preference. Based on the results, this RTS beverage contained a significant amount of minerals ($2.05 \pm 0.01\%$) and high antioxidant potential ($\sim 70\%$) with 0.001% of carbohydrate level closer to zero (atkins drink) compared to the market available products. pH level ($4.37 \pm 0.06 - 3.90 \pm 0.05$), antioxidant property ($70.98 \pm 1.7 - 53.3 \pm 2.0\%$), acidity (0.30 - 0.36%) and Total Plate Count ($2.60 - 3.60 \log \text{CFU ml}^{-1}$) of final product had a significant effect with storage time period ($P < 0.05$). Total Soluble Solid level of the product (1.2 °Brix) was constant during the storage period due to extremely low sugar content. According to physicochemical parameters and microbiological tests, this product was safer for consumption within 4 weeks of the period. Moreover, the production cost is relatively lower compared to the market available, common beverage products. In conclusion, this seaweed-based product can be introduced as a healthy, low-cost, atkins drink as an alternative to conventional beverages.

Keywords: Nutritious beverage, Red algae, Atkins drink, Physico-chemical properties, Seaweed based product