

EXTRACTION OF CRUDE ALGINATE FROM BROWN SEAWEED (*Sargassum* spp.) AND FORMULATION IN TO BEADS AS AN ICE CREAM STABILIZER

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Summary

Sargassum sp. in coastal region of Sri Lanka is currently under-utilized locally. Therefore, purpose of this study was to identify the stabilizing effect of the alginate extract of *Sargassum* sp. to improve the texture and sensory properties of ice-creams. Four types of *Sargassum* sp. were tested to identify the highest alginate yielding type which was compared by different procedures such as, Sulphuric, Hydrochloric and CaCl₂ route. From the time-temperature combinations used, 90°C;1-hour was the optimum at commercial scale compared to 30°C;24 hours, 30°C;1 hour and 60°C;1-hour. The highest yield was obtained from CaCl₂ route and the extracted alginates were converted to beads by using CaCl₂. Beads were incorporated to ice cream, replacing the commercial stabilizer which contains Guar Gum (E412), Carrageenan (E 407a) and Sorbitan ester of Fatty Acids (E433) and the melting point, texture and other sensory properties were analyzed against the control. *Sargassum* sp. 03 gave the highest yield of alginate and the stabilizing effect of 1.5% inclusion had the first melting drop at 5.57th minute. Without the stabilizers, ice cream showed a quicker melting time with first drop melting at 4.51 minutes which is significantly different ($p < 0.05$). Sensory panelists confirmed the textural improvements of the product.

Keywords: Seaweeds; *Sargassum* spp.; Ice-cream; Stabilizer; Alginate

Introduction

Several studies have been carried out in Sri Lankan coastal areas from which it was revealed that most of the algae species are available in the west coast of Sri Lanka and a very few species in east coast. (Jayasuriya, 1992). As per these studies, the common genera native to Sri Lanka is *Sargassum* (Pheophyceae), with having high level of functional properties. (Durairatnam, 1961). Although they were been used in food diets as well as traditional remedies in Asian countries like China, Japan and Korea (Wijesekara et al., 2010, 2011). Edible sea weeds have been identified as an under-exploited plant resource in Sri Lankan context. Currently, in Sri Lanka, these under-utilized species are mostly used to export as in the crude form of it. However, this study was conducted to identify and quantify the alginate polysaccharide present in