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BIO-REFINING OF UNDER-UTILIZED *SARGASSUM SPP.* (PHAEOPHYTA) AVAILABLE IN SRI LANKA FOR NUTRACEUTICAL AND FUNCTIONAL FOOD APPLICATIONS

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Abstract

Study was conducted to examine the nutritional composition of under-utilized *Sargassum* species and the seasonal variations of the nutritive compositions. Incorporation of the nutritional components into foods for human consumption purposes was also studied along with the changes in sensory and physio-chemical properties from such inclusions. Live specimens were collected from Hikkaduwa, Sri Lanka (Latitude: 6.1313°, Longitude: 80.1007°) and the cleaned samples were oven dried and grounded into powder. Proximate analysis was carried out accordingly. The samples were collected at two different seasons and the analysis were repeated respectively to identify the seasonal variations if any. Along with this study, sea weed powder was incorporated to cookies at 0%, 2.5%, 5% and 10% and the proximate analysis, physio-chemical properties and sensory analysis and shelf life studies were extended. Moisture content (13.5±0.1%, 12.9±0.05%) crude protein content (43.3±3.2%, 35.3±1.4), fat content (1±0.2%, 1.4±0.1%), ash content (21.5±0.3% , 21.4±0.7%) in Sargassum Giganteifolium & Sargassum Wightii were recorded. When incorporated all into cookies, moisture increased with increasing seaweed powder concentration. It was found that acidity in cookies did not change with species and seaweed concentration. However, physical properties have shown a difference in two varieties. In colorimetry, in L* (lightness) was highest in 0% incorporation (59.1±3.1) and reduces with the increment of the seaweed percentage. Also, *Sargassum giganteifolium* has the higher L* than *Sargassum wightii*. a* (redness to greenness) and b* (yellowness to blueness), chroma C*ab (saturation) has also reduced with the incorporation of sea weeds from 11.4±2, 26.4±1.6 and 28.7±2 respectively. In sensory attribute study, the most preferred variety was *Sargassum giganteifolium* and shelf life studies proved to have most preferred characteristics in *Sargassum giganteifolium*, after eight weeks' time. Therefore, the study concludes that the underutilized Sargassum can be used to increase the nutrient content and therefore can be used to develop novel food products with high nutritive value in Sri Lankan context

Keywords: Sargassum, Sea weeds, Seasonal variations, Cookies, Sensory properties