

Antioxidant properties of *Sargassum* sp. found in southern coastal region in Sri Lanka and their use in extending shelf-life of foods

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Since phenolic compounds exhibit radical scavenging properties and there is a co-relation between the phenolic content and the anti-oxidant properties, the present study will identify the presence of phenolic compounds in four varieties of *Sargassum* sp. available in southern coast of Sri Lanka, and the possibilities of their food applications. Specimens were collected from Hikkaduwa, and the cleaned samples were dried and grounded with cryogenic grinding to form powder. Phenolic content analysis was conducted by Folin-Ciocalteu method by using the 100% methanol extraction followed by addition of Sodium Carbonate and incubation. Results were obtained by measuring the absorbance at 765nm as a concentration of Gallic Acid equivalent and four varieties *Sargassum* sp. portrayed a phenolic content of $6.2\% \pm 0.021$, $3.7\% \pm 0.021$, $3.4\% \pm 0.002$, $2.7\% \pm 0.008$ from the plants' dry weight respectively (With 1265mg/l GAE, 720mg/l GAE, 661mg/l GAE, 523mg/l GAE respectively). Upon identifying the phenolic content of the seaweed, further analysis was conducted to assess the anti-oxidant activity of the species. Methanol extractions of seaweeds were assessed for DPPH free radical scavenging activity. All the four species exhibited a free radical scavenging activity with species 01 demonstrating the highest activity of $21.7\% \pm 0.1$ at the DPPH concentration of 100 $\mu\text{g/ml}$, against the control sample. At the next stage, a cookie was formulated by inclusion of the seaweed powder at 5% of each of the *Sargassum* sp. The free radical scavenging activity of the seaweed was measured by evaluating the shelf life of the cookie, with sensory parameters against the control. It was found that the cookie with the powder of *Sargassum* sp 01 had the highest extended shelf life from 3 months totaling up to a shelf life of 6 months, where the control had only a 3-month shelf life.

Keywords: *Sargassum* sp., phenolic content, shelf life, free radical, seaweeds

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