

Assessment of the antioxidant and antimicrobial activity of six edible seaweeds available in Sri Lanka

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The seaweeds are considered as a source of bio-active compounds as they are able to produce a great variety of secondary metabolites characterized by a broad spectrum of biological activities. Three species of edible local seaweeds, *Ulva lactuca*, *Kappaphycus alvarezii* and *Gracilaria verrucosa* and Agar (extracted from *Gracilaria verrucosa*), alginate (extracted from *Sargassum wightii*) and Carrageenan (extracted from *Kappaphycus alvarezii*) were screened for potential bioactivity. Extraction of secondary metabolites was carried out using different solvents; methanol, ethanol and acetone, to determine the antioxidant and antimicrobial properties of dried extracts. Antimicrobial activity was determined according to the disc diffusion methods, which allowed the detection of bacterial growth inhibition at low levels. All methanolic seaweed extracts inhibited food pathogenic bacteria tested.

The total phenol contents of dried extracts were significantly different ($P < 0.05$). *Sargassum wightii* exhibited the highest phenol content at 1.24 mg GAE/g out of all seaweed extracts. It also had the highest DPPH scavenging activity ($p < 0.05$) with a 50% inhibition (EC 50) level recorded on 0.125 μ g/ml. Significantly higher flavanoid content 2.67 mg GAE/ g was observed in *Sargassum wightii* seaweed extracts. It was found that dried methanolic extracts of a brown species of seaweed had the highest significant antimicrobial activity. The maximum antimicrobial activity of 8.8 mm was recorded by *G. edulis* against *S. aureus*. The maximum antimicrobial activity was recorded by *U. lactuca* against *E. coli*. *Sargassum wightii* also had a higher antimicrobial activity with up to 50% inhibition. The present work shows that the red and green seaweeds extracts have a significantly higher antimicrobial activity in comparison to the antimicrobial activity of the other seaweeds.

Keywords: antimicrobial, edible seaweeds, antioxidant, pathogenic, bioactivity

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