Comparative Study on Antioxidant Activity and Antimicrobial Activity of *Sargassum ilicifolium* Crude Extract Using Different Solvent Extractions

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Seaweeds are used for food, pharmaceutical and biochemical applications as they possess interesting biological activities. Amongst seaweeds, brown seaweeds show excellent antimicrobial, antioxidant and antiviral properties. *S. ilicifolium* is an economically important, underutilized seaweed species where more research opportunities are available. Hence, the present study was conducted to determine the functional properties of crude extracts of *S. ilicifolium* to find the best extract to develop as an ingredient for food industry. Dried and coarsely powdered samples of *S. ilicifolium* were subjected to solvent extraction using methanol, ethanol, chloroform and acetone. The yield, proximate analysis of crude extracts was determined while antioxidant activity was determined using DPPH and TBARS assays. Antimicrobial activity was determined against the *Staphylococcus aureus*. Significantly highest extraction yield was recorded in methanolic extraction (17.18±3.20%) while 9.60±2.14%, 2.80±0.59%, and 3.60±0.37% yields were obtained from ethanol, acetone and chloroform extractions, respectively ($P<0.05$). The highest carbohydrate (37.64±1.1%) and moisture (14.07±0.71%) were observed in methanolic crude extract. Highest ash content (37.15±4.90%) was observed in ethanolic crude extract. DPPH scavenging activity of the dried seaweed, methanolic and ethanolic crude extractions were 5.32±0.35%, 21.47±2.81%, 14.93±2.55% respectively ($P<0.05$). The malonaldehyde produced in dried seaweeds, chloroform and acetone extractions were recorded higher while ethanolic, methanolic extractions were showed lower than control. Antimicrobial assay against *S. aureus* did not show resistant to all the seaweed extracts. Hence, it could be concluded that the presence of bioactive components in the crude exacts of *S. ilicifolium* while highest components in ethanolic and methanolic extracts. Therefore, the ethanolic extract of *S. ilicifolium* could be a potential source as an ingredient for food industry.

Keywords: Seaweeds, *Silicifolium*, Crude extract, Bioactive compounds, Food industry