

Paper 149 – Sciences**NUTRACEUTICAL CHARACTERISTICS AND BIOACTIVE COMPONENTS OF THREE SEAWEED SPECIES FROM SULU AND ILOCOS NORTE, PHILIPPINES****Maribelle T. Hanani**

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ABSTRACT

This study aimed to determine the nutraceutical composition and properties of three selected marine seaweeds: *Ulva reticulata*, *Halymenia durvillei* and *Sargassum cristaefolium* from Patikul Higad, Patikul, Sulu and Paayas, Burgos, Ilocos Norte. The proximate and heavy metal composition of the seaweeds were determined. Qualitative phytochemical screenings were done. Antimicrobial assay of the algal extracts were tested against pathogens, *Escherichia coli* and *Staphylococcus aureus* using paper diffusion. Antioxidant properties of seaweed extracts were assessed using diphenyl-p-picrylhydrazyl. Nutritional proximate composition of seaweeds in this study revealed that the brown seaweed (i.e. *S. cristaefolium*) collected from Patikul, Sulu had highest average composition in terms of moisture, lipids, and total soluble solids while seaweeds from Burgos, Ilocos Norte had highest content of protein (for *U. reticulata*), carbohydrate (for *H. durvillei*), ash (for *H. durvillei*) and sodium (for *H. durvillei*). This varying results on nutritional proximate composition of the same species of seaweed in two collection sites maybe due to the effect of geographical location, time of collection and the weather condition. Heavy metal analysis in seaweeds showed that zinc registered highest concentration (328.74 mg/kg) in *U. reticulata* growing in Burgos, Ilocos Norte. Other evaluated seaweed species registered lower concentrations of copper (Cu), mercury, and lead indicating that they could be eaten as source of Cu. Antimicrobial property of seaweeds revealed in this study that *S. cristaefolium* of Patikul, Sulu and Ilocos Norte has active zone of inhibition on *E. coli* and *S. aureus*. The *S. cristaefolium* of Ilocos Norte has 5.19±0.52 mm; *S. cristaefolium* of Sulu has 13.35±0.84mm; and *H. durvillei* of Sulu has 5.98± 1.09 mm zone of inhibition for *E. coli* while *U. reticulata* of Ilocos Norte and Sulu had no effect on the bacterial pathogens. Maximum activity of *S. cristaefolium* of Ilocos Norte has 4.68± 3.53 mm and *S. cristaefolium* of Sulu has 15.79 ±0.30 mm inhibition zone against *S. aureus*. *Halymenia durvillei* of Ilocos Norte and Sulu, and *U. reticulata* of Ilocos Norte Sulu have no activity against *S. aureus*. Dried samples of *U. reticulata* of Burgos, Ilocos Norte showed best antioxidant activity while *S. cristaefolium* had least antioxidant activity. Among the seaweeds, the green seaweed, *U. reticulata* exhibited the highest free radical scavenging activity while *S. cristaefolium* had the lowest. The results show that the scavenging activity of the seaweeds on the DPPH radical was dependent on concentration. The phytochemicals responsible for the bioactivities could be attributed to the saponins, terpenes, tannins, steroids, anthraquinones, phenols and flavonoids present in the seaweeds. In conclusion, the seaweeds screened in this study possess phytochemicals, antioxidants, and antimicrobial potentials, which may be considered for future applications in medicine, cosmetics and feed industry. In the next research studies, further investigation should be undertaken to characterize the active compounds present in these types of seaweed as well as to evaluate the effects of each individual compound in fish and microorganism.