

Comparison of Phytochemicals and Antioxidant Activity of the Polysaccharide and De-Polysaccharide Methanol Extracts of Brown Seaweed *Chnoospora minima*

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Chnoospora minima is a brown algae enriched with unique bioactive compounds which are ideal candidates for pharmaceutical, cosmeceutical, and nutraceutical industries. During this study, *C. minima* were extracted using 80% methanol and de-polysaccharide crude methanol extract was obtained by ethanol precipitation followed by separation of the polysaccharide portion. The crude methanol extract of *C. minima* and its fractions were subjected to analysis of phytochemicals and antioxidant activities. For the assessment of radical scavenging activity, DPPH, FRAP, ABTS⁺, and ORAC assays were conducted. Ethyl acetate fractions of both polysaccharide (IC₅₀:0.67 ± 0.01 mg/ml) and de-polysaccharide (IC₅₀:0.59 ± 0.015 mg/ml) crude methanol extracts exhibited DPPH radical scavenging activity in terms of antioxidant activity. Similarly, the highest level of ORAC, FRAP, and ABTS⁺ activity was observed in the ethyl acetate fractions of de-polysaccharide (ORAC:19.73 ± 5.31 mg TE/g; FRAP: 20.34 ± 1.72 mg TE/g; ABTS⁺: 0.06 ± 0.001 mg/ml) and polysaccharide crude methanol extracts (ORAC:16.22 ± 4.31 mg TE/g; FRAP: 19.23 ± 1.98 mg TE/g; ABTS⁺:0.08 ± 0.002 mg/ml). High TPC was observed in the de-polysaccharide crude methanol extract (298.07 ± 0.003 mg GAE/g) and aqueous fraction (141.2 ± 0.002 mg GAE/g) of the polysaccharide crude methanol extract. Highest TFC was observed in both aqueous fractions of de-polysaccharide (594.23 ± 0.001 mg QE/g) and polysaccharide (113.46 ± 0.001 mg QE/g) crude methanol extracts. Chloroform fractions exhibited the highest TAC for polysaccharide (2.20 ± 0.45 mg PE/g), and de-polysaccharide (2.79 ± 0.31 mg PE/g) samples. Therefore, the de-polysaccharide *C. minima* sample exhibited a high level of antioxidant activity along with a high content of phytochemicals which can further be utilized to determine bioactivities that lead to future drug development.

Keywords: *Chnoospora minima*, de-polysaccharide crude methanol extract, polysaccharide crude methanol extract, antioxidant activity, phytochemicals