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Screening of in Vitro Antioxidant Activity of Seaweed, *Hypnea musciformis*

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Abstract

Seaweeds are considered as a rich source of bioactive compounds as they are able to produce a great variety of secondary metabolites characterised by a broad spectrum of biological activities including antioxidant property. However, in contrast to terrestrial plants, only a few studies have reported the antioxidant activity of seaweeds. In the present study antioxidant activities of three different solvent extracts (hexane, methanol and aqueous) of *Hypnea musciformis* were evaluated using DPPH (2,2-diphenyl-1-picrylhydrazyl) free radical scavenging assay and phosphor molybdenum reduction assay. Total Phenolic Content (TPC) was evaluated using Folin-Ciocalteu method and the total flavonoid content was determined by the aluminium chloride (AlCl3) colourimetric method. Characterisation of the crude extracts were carried out using FT-IR analysis. The highest total antioxidant activity was recorded in methanol extract (14.50±0.58 AAE/g) whereas the lowest antioxidant activity was recorded in aqueous extract (0.75±0.29). The total antioxidant activity of hexane extract was recorded as 3.20±0.231 AAE/g. Butylated hydroxytoluene (BHT) was used as positive control and total antioxidant activity was recorded as 19.50±0.58 AAE/g. The highest DPPH antioxidant activity was obtained for methanol extract (IC50=28.00±2.31 mg/L) while the lowest activity was obtained for the aqueous extract (IC50=6006.00±6.93 mg/L). Gallic acid was used as the standard and BHT was used as the positive control and IC50 values were recorded as 3.50±0.38 mg/L and 24.00±1.15 mg/L respectively. The highest TPC was exhibited in methanol extract (14.02±0.03 GAE/g) whereas the lowest was recorded in aqueous extract 0.89±0.07 GAE/g. TPC of BHT was recorded as 254.93±4.43 GAE/g. The highest TFC was recorded in methanol extract (0.0170±0.04 QE/g) and the lowest TFC was recorded in aqueous extract (0.0098±0.14 QE/g). The TFC content of the hexane extract was 0.0102±0.13 QE/g. FT-IR analysis revealed the presence of alcohols/phenols, alkanes, carboxylic acids, alkenes, aromatics and aromatic amines, aliphatic amines in methanol crude extract. The study emphasises the importance of isolating and examining individual bioactive compounds present in *H. musciformis* for future research as it has revealed the antioxidant activities.

Keywords: *Hypnea musciformis*, Antioxidant activity, DPPH