Section E2

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FTIR spectroscopic analysis and antioxidant activities of crude polysaccharides from Sri Lankan marine algae

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Oceans cover more than 70% of earth's surface endowed with a wide diversity of marine organisms that provide a rich source of natural products. Crude polysaccharides primarily isolated from marine algae and other organisms are widely used in food, cosmetics and the pharmaceutical industry due to their broad spectrum of bioactivity with low toxicity. Antioxidant activities of these polysaccharides has become a topic of interest as these compounds play a significant role in defending the body against reactive oxygen species (ROS) that cause a broad spectrum of disease conditions. There was no previous report on characterization of polysaccharides from Sri Lankan algae. The aim of this study was to investigate the underexplored marine algae in Sri Lankan coastal waters for studying algae crude polysaccharides (CP) and to explore their antioxidant properties. Crude polysaccharide fractions obtained from the hot water extraction and ethanol precipitation of eleven Sri Lankan algae including, *Chaetomorpha antennina, Gracilaria corticata* var. *ramalinoides, Gracilaria foliifera, Ahnfeltiopsis pygmaea, Halimeda discoidea, Halimeda gracilis, Gracilaria corticata, Jania adhaerens, Caulerpa racemosa* f. *remota, Chnoospora minima* and *Gracilaria edulis* were analyzed for their antioxidant properties using DPPH, alkyl and hydroxyl radical scavenging and intra cellular ROS scavenging activities. Further the CPs was analyzed using Fourier Transform Infrared (FTIR) spectroscopy. The CP fraction of *C. minima* indicated the highest DPPH and alkyl radical scavenging activities with intracellular ROS scavenging activities for AAPH and H_2O_2 induced ROS production in "Chang" cells. In fact, *C. minima* was identified as the most potent sample with high antioxidant activity and the FTIR studies revealed the principle polysaccharide present in *C. minima* as fucoidan. The degree of sulfation of these polysaccharides indicated a positive correlation with the antioxidant activity. These algae polysaccharides could be useful in pharmacological, food and in industrial applications.

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