

Effects of Different Solvents on the Antioxidant Activity of Several Seaweed Species from Semporna, Sabah, Malaysia

ABSTRACT

Sabah is the main seaweed producer in Malaysia especially red seaweeds which are commercially cultivated for the production of food gum known as carrageenan. Seaweeds are also high in phytochemical such as antioxidant compounds. Three seaweeds species from the Semporna Seawater, Sabah, namely *Kappaphycus alvarezii*, *Caulerpa lentillifera* and *Sargassum polycystum* were chosen for this study for the analysis of their antioxidant activities. *K. alvarezii* species is commercially cultivated whereas the other two (*C. lentillifera* and *S. polycystum*) are wild species. All seaweeds species underwent drying process in a cabinet dryer prior to the analyses. Six types of solvents which were water, ethanol, methanol, chloroform, ethyl acetate and hexane were used for the extraction process. Every concentrated, extracted solutions were then measured for their antioxidant activities based on total phenolic content (TPC), diphenylpicrylhydrazyl (DPPH) radical scavenging activity, ferric reducing antioxidant power (FRAP) and β -carotene bleaching assay. Results showed that TPC of *S. polycystum* was significantly higher ($p < 0.05$) than *K. alvarezii* but not significantly different ($P > 0.05$) from *C. lentillifera*. Even though the extraction yield of water was the highest, but the greatest antioxidant activity values were seen in methanolic extraction in comparison to the other solvents in TPC, DPPH and FRAP. This indicated that most of the antioxidant compounds in all the three seaweed samples are polar. However, high antioxidant activity in terms of β -carotene bleaching assay were seen in other solvent extractions, which were chloroform, hexane and ethyl acetate. This indicated that seaweed also contain non-polar antioxidant compounds such as β -carotene. Overall, the best extraction method of antioxidant compounds in seaweed samples was using methanol as the extractant.