

P8-119

Higher Effect of Water Extracts of *Hizikia fusiformis* on ROS Scavenging and Lipid Peroxidation Inhibition

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Water and organic extracts (diethyl ether, chloroform, ethyl acetate, acetone, ethanol and methanol) prepared in six different *Hizikia fusiformis* organic extraction series were screened on Reactive Oxygen Species (ROS) scavenging and lipid peroxidation inhibition ability by using 1,1-diphenyl-2-picrylhydrazyl (DPPH), superoxide anion, hydrogen peroxide and hydroxyl radical scavenging and inhibition of linoleic acid oxidation assays. Water extracts showed significant ROS scavenging activities while methanol and ethanol extracts also indicated a considerable scavenging activity. The highest activities recorded for the water extracts, specially in DPPH radical scavenging (activity around 80 %) and H₂O₂ scavenging (activity around 75 %) assays suggest the presence of strong water soluble antioxidative compounds. Of the assays screened, comparatively higher ROS scavenging activities were recorded in the DPPH and hydroxyl radical scavenging assays. DPPH radical scavenging activities were well correlated with the polyphenolic content. ROS scavenging and lipid peroxidation inhibition abilities recorded in assays indicate that *H. fusiformis* is a valuable natural antioxidative source containing both water and fat soluble antioxidative compounds.

P8-120

Potential Antioxidant Activity of Marine Red Alga *Grateloupia filicina* Extracts

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Grateloupia filicina is an important alga cultivated as a source of food in Korea and Japan. In order to examine its potential antioxidant activity, crude extracts of *G. filicina* were evaluated for their effect on scavenging of reactive oxygen species (DPPH, OH, H₂O₂ and O₂⁻) and inhibition activity of lipid peroxidation. The activities of these extracts were compared with those of commercial antioxidants such as BHA, BHT and α-tocopherol. The methanolic extract (2 mg/mL) of *G. filicina* scavenged 82 % of DPPH radicals which is almost three times higher than that of BHT. The same methanolic extract scavenged 65 % of superoxide anion which is almost two times higher than that of BHT and α-tocopherol. For the radical scavenging activity assays, methanolic extract showed highest antioxidant activity which was constituted with highest total phenolic content. In contrast, the extracts in chloroform and carbon tetrachloride inhibited lipid peroxidation more effectively than all commercial antioxidants tested in a linoleic acid model system. The antioxidant effect of the different extracts in linoleic acid model system was in the order of chloroform > carbon tetrachloride > ethyl acetate > methanol > acetone > hexane > ether > hot water. For radical scavenging activity assay, the algal extracts act as electron donors in order to stabilize radical species. In linoleic acid assay, algal extracts serve as inhibitors of lipid peroxide radical formation. However, *Grateloupia filicina* extracts effectively scavenge various reactive oxygen species and inhibit peroxidation of linoleic acid.