

## **Antioxidant activities and polyphenolics of various solvent extracts of red seaweed, *Gracilaria changii***

### **Abstract**

This study determined the levels of polyphenols, flavonoids, carotenoids and antioxidant activity of the edible red seaweed, *Gracilaria changii*. Freeze-dried *G. changii* powder was extracted using five solvent systems: 80 % ethanol, 80 % methanol, 80 % acetone, ethyl acetate and water. The antioxidant activity of the extracts was measured using three assays, namely 2,2-diphenyl-1-picrylhydrazyl (DPPH), ferric reducing power (FRAP) and  $\beta$ -carotene bleaching assays (BCB). The total phenolics (TPC) and total flavonoids content (TFC) and the total carotenoids content (TCC) were also determined. Ethanol extract had the highest yield followed by methanol > water > acetone > ethyl acetate extract. The radical scavenging effects of all the extracts showing dose-dependency properties with the ethyl acetate extract of *G. changii* exhibiting the highest radical scavenging effect ( $EC_{50}$  of  $0.51 \pm 0.09$  mg mL<sup>-1</sup>), while the water extract had the lowest scavenging effect of  $7.80 \pm 0.57$  mg mL<sup>-1</sup>. Ferric reducing power was in the following descending order: ethyl acetate > ethanol > methanol > acetone > water. TPC was highest in the ethyl acetate extract ( $21.57 \pm 2.58$  mg PGE g<sup>-1</sup>) and least in the water extract ( $6.06 \pm 0.52$  mg PGE g<sup>-1</sup>). The TFC of *G. changii* was in the range of  $18.97 \pm 0.89$ – $200.87 \pm 3.61$  mg RE g<sup>-1</sup>. The results revealed the effect of different extracting solvents in altering the antioxidant potential of *G. changii*, and ethyl acetate was identified as the most efficient solvent for extracting bioactive compounds from this red seaweed.