

Dietary Fibre from Edible Seaweeds: Physicochemical and Functional Properties

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Dietary fibre from *Gracilaria edulis*, *Sargassum wightii* and *Ulva lactuca* was prepared by combination of enzymatic and chemical method under optimized conditions with the objective to analyze their physico-chemical and functional properties such as hydration properties (water holding capacity and swelling capacity), oil holding capacity and antioxidant properties. Structural pattern and surface morphology of the dietary fibre were analyzed by Fourier transform-infra red (FT-IR) and scanning electron microscopy (SEM). The FT-IR spectrum analysis revealed that dietary fibre extracted from three seaweeds species had almost similar in absorbance and/or wave numbers of characteristic bands at 500 to 3200 cm^{-1} . The SEM image of dietary fibre from *G. edulis* and *S. wightii* showed irregular, uneven and loosen surface with greater numbers of cracks, and holes compared to dietary fibre from *U. lactuca*. DPPH radical scavenging activity of dietary fibre from *S. wightii* ($54.01 \pm 0.19\%$) showed higher activity than dietary fibre from *G. edulis* and *U. lactuca*, whereas, the highest reducing power was observed in dietary fibre from *U. lactuca* ($0.32 \pm 0.01\%$). The highest water holding capacity and swelling capacity was found in dietary fibre extracted from *G. edulis* ranged from 18.85 ± 0.18 to 23.28 ± 0.23 g/g and 19.72 ± 0.25 ml/g, respectively. The highest OHC at 40 °C was found in dietary fibre extracted from *S. wightii* (1.85 ± 0.06 g/g) followed by dietary fibre from *G. edulis* (1.60 ± 0.02 g/g) and *U. lactuca* (1.23 ± 0.02 g/g). Results indicated that dietary fibre extracted from three seaweed species could be considered as the promising functional food ingredients with wide application in the food industry.