Comparative study of drying methods on chemical constituents of Malaysian red seaweed

Abstract

This study determined the proximate composition, phytochemical and antioxidant activity of the edible red seaweed, Kappaphycus alvarezii, under different drying conditions, namely, oven dried, sun dried, vacuum dried, and freeze dried. The proximate composition of K. alvarezii has shown no significant difference (p > 0.05) in macronutrient components except fat content. Phytochemical studies conducted on total phenolic content and total flavonoid content showed that vacuum-dried extracts demonstrated the highest total phenolic content at 12.97 mg PGE g⁻¹ DE. In vitro antioxidant activities of seaweed extract by ferric-reducing antioxidant potential and 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity proved that oven-dried extracts showed the highest ferric-reducing antioxidant power value, 272.95 μ M TE mg⁻¹, and highest scavenging activity, EC₅₀ 9.55 mg mL⁻¹. In general, sun-dried extracts showed lowest antioxidant among all treatments.