## Effect of different drying techniques on the phytochemical content and antioxidant activity of Kappaphycus alvarezii

## Abstract

The effect of different drying techniques on the phytochemical content and antioxidant activity of Kappaphycus alvarezii ('crocodile' morphotype) were investigated. Phytochemical (total phenolic, flavonoid, anthocyanin and carotenoid content) and antioxidant activity of the seaweed were determined. The seaweed was dried using seven types of drying techniques; oven drying (temperature of 40 °C), oven drying (temperature of 80 °C), sun drying, hang drying, sauna drying, shade drying and freeze drying. There were significant differences in the phytochemical content and antioxidant activity between the dried seaweed samples. The total phenolic content of the dried samples were in the range of 26.11 to 53.33 mg gallic acid equivalent (GAE) per 100 g, total flavonoid content from 9.83 to 25.67 mg catechin equivalent (CE) per 100 g, total anthocyanin content from 0.05 to 0.11 mg cyanidin-3-glucoside equivalent (C-3-GE) per gramme and total carotenoid content from 0.03 to 0.24 mg  $\beta$ carotene equivalent (BCE) per gram, respectively. The oven-dried (40 and 80 °C) and shade-dried samples contained the highest values of phytochemical content as compared to other dried samples tested. Antioxidant activity were determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH), 2,2-azino-bis-(3-ethylbenzothiazoline-6-sulphonic acid) (ABTS) and ferric reducing/antioxidant power (FRAP) assays. The oven-dried (40 and 80 °C) and shade-dried samples also displayed stronger scavenging activity and reducing ability as compared to other dried samples tested. The lower values of phytochemical content and weak antioxidant activity were detected in sun-dried and sauna-dried samples. This finding suggested that different drying techniques greatly influence the occurrence of phytochemical content and antioxidant activity in seaweeds.