Osmotic dehydration of Kappaphycus alvarezii

ABSTRACT

The red alga Kappaphycus alvarezii has been reported to be a potential raw material for functional food due to its high content of soluble dietary fibre, mineral, omega-3 fatty acids as well as a substantial amount of essential amino acids. In order to benefit from these excellent nutritional properties, this project aimed to develop a highvalue dehydrated snack from K. alvarezii using osmotic dehydration (OD) treatment prior to hot air-drying. A 3×3 factorial design with 50°, 60° and 70°Brix sucrose concentration as well as treatment temperatures of 30, 35 and 40 °C were used. In general, an increase in sucrose concentration and temperature promoted mass transfer. OD treatment using 70°Brix sucrose concentration at 40 °C caused case hardening of the seaweed that reduced the solid gain ($p < 0.05$). Firmness of the seaweed increased with sucrose concentration and was not altered by temperature ($p < 0.05$). The colour of the seaweed was not affected by OD treatment ($p > 0.05$), but dehydrated seaweed became darker at high sugar concentration. Interaction effect between sucrose concentration and temperature was found to affect the water loss and solid gain of the OD treatment ($p < 0.05$). The best sensory acceptable dehydrated seaweed was successfully identified. The final product contained high dietary fibre and very low Na/K ratio.