

Evaluation of Chemical and Sensory Acceptability of *Kappaphycus alvarezii* Powder Incorporated Functional Processed Cheese

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Kappaphycus alvarezii is a red algae, which is mainly cultivated for carrageenan extraction. It can act as a functional food ingredient due to the presence of antioxidants and phenolic compounds. In this study, the chemical and sensory properties of *K. alvarezii* seaweed powder (SWP) incorporated processed cheese were evaluated. Fresh seaweed was cleaned, blanched, oven dried (60°C for 18 hrs), and pulverized to prepare SWP. Chemical properties of the SWP, including moisture content (Moisture analyzer), antioxidant activity (DPPH), total phenolics (Folin-Ciocalteu method), and total flavonoids (AlCl₃ colorimetric method) were evaluated. Natural Caerphilly cheese was prepared using fresh cow milk, incorporating rennet (0.03%), single strain *Lactobacillus helveticus* culture, and ripened at 10 for 2 weeks at 80% RH. Ripened cheese was melted and incorporated with different w/w levels of SWP (0, 1, 2, and 3%) to prepare final processed cheese and stored in the refrigerator (4 °C). Antioxidant activity (AOA), pH, microbial qualities of the cheese were evaluated at 1,7,14 and 21 days while total phenolics (TP) and total flavonoids (TF) were analysed at 7th day of refrigerated storage (4 °C). Sensory evaluation was done using the 9-point hedonic scale at 7 days of storage (4 °C). SWP contained 4.77 0.16% of moisture, 22.53 2.09% of AOA, 5.18 0.04 mg GAE/100g of TP and 5.37 0.24 mg QE/g of TF. Increasing the level of SWP significantly increased the AOA, TP, and TF in cheese. Three percent of SWP incorporated cheese showed significantly higher AOA (16.47 0.26%), TP (2.82 0.029 GAE/100g) and TF (2.59 0.37 mg QE/g) compared to control (0% SWP) which showed 4.82 0.02% AOA, 1.24 0.01 GAE/100g TP and 0.10 0.04 mg QE/g TF. The sensory properties were not significantly different between treatments. *K. alvarezii* SWP can be successfully incorporated into the processed cheese at the 3% level to develop potentially functional processed cheese with acceptable sensory properties.

Keywords: Seaweed powder, Antioxidant activity