

Assessment of dough rheological characteristics and soft bread roll quality of wheat flour incorporated with seaweed powder

ABSTRACT

Purpose – This study aims to investigate the effects of incorporating seaweed composite flour on soft roll dough rheological characteristics and quality.

Design/methodology/approach – In this study, wheat flour was substituted with seaweed powder obtained from red seaweed (*Kappaphycus alvarezii*) at varying proportions (100:0; 99:1; 98:2; 97:3; 96:4; 95:5, 94:6, 93:7 and 92:8) and applied in soft roll production. The effects of seaweed composite flour were evaluated in terms of rheological characteristics, proximate composition and physical properties. The sensory characteristics of the soft rolls was evaluated by 40 untrained panellists by using a hedonic scale. **Findings** – Farinograph analysis of the soft roll doughs showed that the incorporation of seaweed powder promoted an increase in water absorption, development time and mixing tolerance index, whereas it decreased stability time. Analysis of the proximate composition of the soft rolls showed that protein and carbohydrate contents decreased, but moisture, ash and crude fibre contents substantially increased. Dietary fibre increased with the increase in the proportion of seaweed powder added. The specific volume, bulk density and firmness of the soft rolls ranged from 3.01 to 5.48 cm³ /g, 0.18 to 0.33 g/cm³ and 1.86 to 20.63 N, respectively. Sensory evaluation results showed that the mean score of sensory attributes decreased as the proportion of seaweed powder added was increased in the formulations. With regard to the overall acceptability, the panellists preferred the soft rolls with the least amount of seaweed powder added. The results of hedonic tests revealed that the panellists' acceptance decreased as higher amounts seaweed powder were added in the formulations.

Originality/value – This study showed that the seaweed powder of *K. alvarezii* can be utilised as an ingredient to improve the nutrient composition of baked products.