

## **Physicochemical, Sensory Properties and Lipid Oxidation of Chicken Sausages Supplemented with Three Types of Seaweed**

### **ABSTRACT**

The effect of the addition of three types of tropical edible seaweeds, *Kappaphycus alvarezii* (KA), *Sargassum polycystum* (SP), and *Caulerpa lentilifera* (CL), on sausages were studied. Nine sausage formulations with three levels of inclusion (2%, 4%, and 6%) of each seaweed were prepared, analysed, and compared with the control sample (without seaweed) in terms of their physicochemical properties, total phenolic content, and lipid oxidation. The modified sausages had low moisture and fat content ( $p < 0.05$ ) but high ash and dietary fiber content ( $p < 0.05$ ) compared to the control sausage. The addition of seaweed powder changed the texture of the sausages, mainly its hardness and chewiness ( $p < 0.05$ ), but no significant difference in cohesiveness and springiness was found ( $p < 0.05$ ). The modified sausages were shown to have high water holding capacities and cooking yields. The different types of seaweed modified the colour of the chicken sausages differently. In general, the  $L^*$  (brightness) and  $b^*$  (yellowness) values were low for all sausage samples containing seaweed powder ( $p < 0.05$ ), while the  $a^*$  (redness) value increased with the addition of the KA and SP seaweed powder but decreased for the sausage sample with added CL seaweed powder ( $p < 0.05$ ). Moreover, the modified sausages have higher total phenolic contents and high antioxidant capacities, which contributed to slowing the oxidation of lipid in sausages during storage ( $p < 0.05$ ). Sensory evaluation showed that the panellists found up to 4% of KA and 2% of SP to be acceptable. Overall, the seaweeds, especially KA and SP, could potentially be developed as excellent additives for the manufacture of highly technological high-quality meat products.