

Proximate, Physicochemical, and Sensory Properties of Biscuits Formulated with *Macrotermes subhyalinus* Flour

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Abstract

In recent years, the high nutritional value of edible insects has attracted researchers and the food industry's attention as a potential source of food with enhanced nutrition. In this study, *Macrotermes subhyalinus* flour was added to wheat flour with a view to obtaining a biscuit that is nutritionally enhanced and acceptable to consumers. The edible insect's nutritional, physicochemical and sensory properties were determined and compared with wheat flour. Moisture content of the composite flour ranged from 6.83 to 7.76%, while the moisture of the biscuits ranged from 2.86 to 7.90%. A notable significant difference ($p < 0.05$) was observed in the protein content of the composite flour and biscuits as the flour concentration increased, ranging from 15.03 to 21.52% and 17.38 to 20.63%, respectively. The lightness of the composite flours decreased significantly ($p < 0.05$) with an increase in edible insect flour addition, while the colour attributes of redness and yellowness did not exhibit any statistical differences ($p > 0.05$). Biscuits generally showed substantially lower L^* , indicating that they were darker in colour than the corresponding composite flours. The water activity of the biscuits ranged from 0.44 to 0.67. According to the results obtained, the added concentration of insect flour did not significantly ($p > 0.05$) influence the hardness of the biscuits. MZ-5 was the most liked insect-enriched biscuit in terms of colour, taste and pleasant aroma attributes. In this study, more than 70% of consumers indicated a willingness to consume biscuits enriched with edible insects.