Nutrient Composition and Utilization of Edible Termites (*Macrotermes Subhylanus)* and Grasshoppers (*Ruspolia Differenes*) from Lake Victoria Region of Kenya

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ABSTRACT

Insects have been consumed as part of a traditional diet in Lake Victoria region. However, with modernization, there has been a decline in this practice yet the insects can provide beneficial nutrients to the human body. The aim of this research was to assess the nutrient content of the selected edible insects and their utilization in food product development.

The termite (*Macrotermes subhylanus*) and the green and brown grasshoppers (*Ruspolia differens)* samples were collected from Siaya District in 2007 and 2008 during the short and long rainy seasons. Nutrient composition analysis were performed on each of the species (n= 6) in triplicates. The termite showed a protein content of 45.9 ± 0.2% while the green grasshopper showed a fat content of 48.2 ± 0.2%. Potassium was the most abundant macro mineral in the green grasshopper with a value of 370.60 ± 1.10 mg/100g while iron was the most abundant trace mineral in the termite with a value of 11.52 ± 0.92 mg/100g. The brown grasshopper had a retinol content of 2.4 ± 1.48 μg/g while the termite had a riboflavin content of 3.39 ± 1.76 mg/100g. Oleic acid was the main fatty acid in the termite with a value of 53.07 ± 1.21% while the brown grasshopper showed linoleic content of 31.21 ± 0.25%. The neutral lipids formed the major lipid fraction in termite with a value of 64.73 ± 1.59% and 89.42 ± 1.80% in the green grasshopper.

A serving of 100g of fried dried termite was found to contribute 13% retinol RDI and 150% of riboflavin RDI. The mushroom-termite composite soup with 2.5% and wheat-termite composite buns with 5% termite had the highest consumer preference rating. The mushroom-termite composite provides 61.24% of the protein RDI while the wheat-termite composite buns provide 34.73% of the protein RDI on consumption of 100g of the product. The research

has shown that the insects and their products are a rich source of nutrients required by the body.