## ABSTRACT

The human population faces an increasing threat of food insecurity as well as malnutrition in the form of protein-energy malnutrition and micronutrient deficiencies. According to recent research, consumption of insects can potentially meet the recommended daily energy intake of macronutrients, micronutrients as well as provide an alternate source of nutrients for innovative cuisines. The objective of this study was to contribute to the enhanced utilization of *Scarabaeus satyrus* in the human diet for food security and for industrial use. The nutritional content, functional properties, physicochemical characteristics and microbial safety of processed edible dung beetle larvae (*Scarabaeus satyrus*) were analysed to provide information on its potential in the human diet. Samples were randomly selected from the counties of Bungoma, Siaya, and Kakamega in Western Kenya and processed using the three methods of toasting, oven-drying, and roasting. A completely randomized design with factorial arrangement was employed in the study, with three replicates for each experiment. Analysis of variance was used to find differences between County and processing techniques at $P \leq 0.05$. Results showed that *S. satyrus* larvae contained crude protein of 59.65 - 66.05 g/100g, crude fat (15.18-16.87 g/100g) and crude ash (4.45-4.67g/100g) on dry weight basis. On a dry weight basis, iron was the most abundant trace mineral with a value of 19.19mg/100g, while phosphorus was the most plentiful macro mineral with 331.42mg/100g. The range of protein digestibility was 64.27–70.03%. The dominant unsaturated fatty acid was Oleic (45.71±2.45%) while the main saturated fatty acid was Lauric (45.43 ±0.8%). Saponification value of the oils ranged between 127.0-130.17 mgKOH/g oil. Functional properties of the powders showed high lipophilic (332.45±19.73%) and moderate (1.11±0.14ml/g) hygroscopic tendencies in toasted samples from Bungoma and Siaya Counties respectively. Microbial analysis did not detect *Salmonella* in any of the samples. Total viable counts, *Staphylococcus aureus*, *Escherichia coli*, yeasts and moulds were present with raw samples from Bungoma County containing highest amounts of total viable counts (6.20±0.06 Log cfu/g). However, upon processing by roasting, the total viable counts reduced by over two log cycles to 4.15±0.05 Log cfu/g. These findings indicate that *S. satyrus* may be a rich source of minerals, lipids, and proteins. It would be a good constituent in novel food formulations because of its good functional qualities. The current study also shows that heat processing is effective in lowering the microbial load to levels that are safe for human consumption.