

Physico-chemical and sensory quality evaluation of an extruded nutrient-dense termite (*Macrotermes natalensis*) and millet (*Eleusine coracana*) instant porridge

Robert Musundire, Robert Brian Dhlakama & Julien Harusekwi Serere

Abstract

One of the traditional practices in drier eastern districts of Zimbabwe aimed to reduce protein malnutrition involves blending nutrient rich termite powders and millet flour. Despite this common practice, no standard guidelines have been developed to optimize and evaluate nutritional benefits of this blending. This study was aimed at formulating an extruded instant porridge composed of termite and millet powders and characterizing the physico-chemical, nutritional and sensory attributes of this porridge. Termite and millet powders were analysed for nutritional quality using Association of Official Analytical Chemists methods after which formulation of porridge was done using the Pearson Square method. The instant porridge's nutritional and heavy metal contents were analysed using Inductively Coupled Plasma—Optical Emission Spectrometry method. Functional properties and microbiological quality were assessed using standard methods. A panel of 80 untrained individuals assessed the porridge for appearance, texture, aroma, taste and overall acceptability. Results showed that the porridge had 8.1% moisture content, protein 11.5%, carbohydrate 73%, crude fibre 2%, fat 4%, ash 2% and energy content of 351 kcal/100 g. No toxic heavy metals were detected in the porridge. Microbial tests indicated the presence of yeast and molds but no *E. coli* was present in the analysed samples. A combined 52% of sensory evaluators either liked or liked very much the instant porridge. A sizeable number indicated the unfavorable mouth stickiness, heavy termite aroma and fear of allergenicity. The instant porridge has potential to help in addressing micronutrient deficiencies if attributes to improve consumer acceptability are enhanced.