



Tropentag, September 20-22, 2023, hybrid conference
“Competing pathways for equitable food systems transformation:
Trade-offs and synergies”

Effect of processing methods on the nutritional composition flours and sensory properties of cake from bambara and pigeon pea flour

GBOLAHAN ALAGBE¹, OLAJUMOKE A. ALAGBE², KLÁRA URBANOVÁ¹

¹*Czech University of Life Sciences Prague, Fac. of Tropical AgriSciences, Dept. of Sustainable Technologies, Czech Republic*

²*Forestry Research Institute of Nigeria, Sustainable Forest Management Department, Nigeria*

Abstract

The effect of roasting and malting on the nutritional composition of Bambara nut and pigeon pea flour and the sensory characteristics of cake made from it were investigated. The Bambara nut and pigeon pea were malted (72 hrs) and roasted (150°C), thereafter milled into flour. The flour was passed through a 0.5 mm screen to remove particle clumps. The flour obtained was subjected to proximate, functional and mineral analysis, while the cake made from the flours were subjected to sensory evaluation to determine the effect of the processing methods. Results obtained showed that there was significant difference ($p < 0.05$) in the proximate and mineral composition of both flours. Proximate composition of the flours ranged from 1.74 to 2.87 % Ash, 2.87 to 3.58 % crude fibre, 2.93 to 4.74 % fat, 17.70 to 21.31 % crude protein and 54.41 to 60.36 % total carbohydrate. Protein values were highest in pigeon pea from both processing methods (21.31 for malting and 20.35 for roasting) while Bambara nut flour had the highest values in both crude fibre and fat contents from both processing methods. Results of the functional properties ranged from 2.73 to 3.1 ml g⁻¹ water absorption capacity, 2.06 to 2.16 ml g⁻¹ oil absorption capacity, 0.60 to 0.72 g cm⁻² bulk density and 5.28 to 6.62 % swelling index. The sensory evaluation of the cake made from the flours had no significant difference ($p < 0.05$), while the overall acceptability have some significant difference ($p < 0.05$), with cake made from malted pigeon pea flour having the most overall acceptability score (7.45). These findings suggest that germination could be a beneficial processing method for improving the nutritional and sensory quality of Bambara nut and pigeon pea flour, thus increasing their utilisation in food products.

Keywords: Bambara nuts, nutritional composition, pigeon pea, processing methods, sensory properties