

Evaluation of post-fermentation (wet mix) fortification of maize-bambara groundnut malt complementary foods for lactobacillus activity and improved iron and zinc contents

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The post-fermentation (wet mix) fortification procedure for maize-bambara groundnut malt (MB_{mb}) complementary food was modified to improve iron and zinc contents while the activities of *Lactobacillus* isolates were evaluated. De-germed maize-bambara groundnut malt flour (70:30) was fermented by backslopping for 72 hours. Ashed cattle bone, roselle calyces and red palm oil emulsified with *Brachystegia eurycoma* flour-in-water suspension (1:1.81:5.51, weight basis) was fermented by backslopping for 72 hours and used as fortificant mix. The fermented fortificant mix was mixed with the fermented flour blend in a ratio of 1:11.019 and dried at 50°C. During drying, lactic acid bacteria isolated from the fortified fermented mix were characterized and their activities determined. The cakes were milled and the flour analysed for micronutrient, antinutrient and sensory qualities. The pH of MB_{mb} decreased from 9.43 to 9.02 during the 72 hours of fermentation. Bacteria isolated were *Bacillus cereus*, *Staphylococcus aureus* and *Staphylococcus epidermidis*, while the Lactic acid bacteria included *Lactobacillus brevis*, *L. bulgaricus*, *L. desidiosus* and *L. plantarum*. Agar gel diffusion tests showed that *L. desidiosus* was most effective against three pathogens (*E. coli*, *S. aureus* and *Salmonella* spp) and the three bacterial isolates. The MB_{mb} contained 0.054mg/g Ca, 5.30mg/g Fe, 1.58mg/g Zn and 3.93µg(RE/g) vit. A. The phytate:mineral molar ratios for Ca, Fe and Zn were 0.00086:1, 0.000012:1, 0.000048:1 which are significantly ($P < 0.05$) lower than the suggested desirable levels of <0.17, <1.0 and <18.0. MB_{mb} gruel was preferred over the proprietary formula used as control in terms of colour, texture, flavour, taste and overall acceptability.

Biography

Peter Orji Uvere completed his Ph.D in 2002 from the University of Nigeria, Nsukka, Nigeria. He is a Senior Lecturer in the Department of Food Science and Technology, University of Nigeria, Nsukka, Nigeria. He has published 18 papers in reputed journals, contributed a chapter in a book and co-edited one book. He serves as an editorial board member of Journal of Fermentation Technology.

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