

Evaluation of pre- and post-fermentation, food-to-food fortification of maize-bambara groundnut malt and maize-cowpea malt complementary foods for improved calcium, iron, zinc and vitamin A contents

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Iron, zinc, calcium and vitamin A contents in complementary foods in developing countries typically fall below the recommended daily allowance (RDA). This study was aimed at improving the calcium, iron, zinc and vitamin A contents of MB_m and MC_m complementary foods at the same time by using processed cattle bone, *Alternanthera brasiliana* or roselle and red palm oil in the fortificant mix and comparing outcomes when fortification was carried out by the modified pre and wet mix backslipping fermentation procedures. Degermed maize flour was blended with bambara groundnut malt or cowpea malt in a 70:30 ratio. The flour blends were fortified for calcium, iron, zinc and vitamin A using a processed multi-mix of cattle bone, roselle or *A. brasiliana* and palm oil (1:11.3:11.7) in a ratio of 33.45:1 (w/w). Incorporation was before (pre-) fermentation or by wet mixing (after separate fermentation of the flour blend and fortificant mix). For the roselle-based pre-fermentation-fortified foods, the calcium, iron, zinc and vitamin A contents were 2266.47, 14.22, 19.67 mg/100 g, 487 ugRE/100 g and 2516.67, 15.92, 17.67 mg/100 g, 491 ugRE/100 g for MB_m and MC_m respectively. In the wet mixed samples, it was 3283.33, 19.17, 30.33 mg/100 g, 530.01 ugRE/100 g and 4476.67, 19.37, 27.33 mg/100g, 603 ugRE/100g for MB_m and MC_m respectively. The *A. brasiliana* pre-fermentation fortified MB_m and MC_m samples had 2178.87, 14.72, 38.55 mg/100 g, 445.20 ugRE/100 g and 4441.10, 14.98, 28.20 mg/100 g, 475.9 ugRE/100 g respectively, while the wet mixed samples had values of 1898.87, 12.18, 21.80 mg/100 g 644.70 ugRE/100 g and 2178.87, 14.52, 19.66 and 504.40 ugRE/100 g respectively.

Biography

Uvere P. O holds a Master's degree in Microbiology and a Ph.D. in Food Science and Technology from the University of Nigeria, Nsukka where now he is a Senior Lecturer in the Department of Food Science and Technology. His research interest is in the application of malting and fermentation techniques in the processing of complementary foods, indigenous beverages and cassava. He has 27 papers published in journals and books or presented at conferences. He is on the Editorial Board of the *Journal of Fermentation Technology* published by OMICS Group.

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