

PROXIMATE COMPOSITION, FUNCTIONAL PROPERTIES, AND MINERAL CONTENT OF COMPOSITE FLOUR PRODUCED FROM CEREAL-LEGUME BLENDS

ABSTRACT:

Cereals and legumes have found utmost acceptance by many people across the globe due to their great contribution to health and the economy. This study was conducted to determine the proximate and mineral compositions as well as the functional properties of composite flours from cereal-legume blends in order to evaluate their nutritional potential and promote public awareness of the health benefits of cereal-legume composites. The samples of cereals and legumes were obtained from Kotokuraba Market, a suburb of Cape Coast, processed and analyzed for proximate composition, functional and mineral content. Five samples were subjected to treatment. Three out of the total (5) were formulates of wheat, maize, soybean and oats flours made by mixing the flours (wheat, maize, soybean and oats) in the ratios (composite 1=25:25:25:25, composite 2=50:20:20:10 and composite 3=20:20:50:10) respectively. The remaining two samples were set as controls (100% Soybean and 100% wheat). The results showed that moisture, protein, fat, ash, and soluble carbohydrate contents ranged from 1.93-5.41%, 16.17-40.45%, 4.88-10.38%, 2.05-3.57% and 38.39-60.59% respectively. The bulk density, water absorption capacity, oil absorption capacity, swelling capacity, emulsion activity and emulsion stability ranged from 0.67-0.77g/ml, 253.33-273.33%, 200.00-206.67%, 35.33-42.00%, 3.85-16.03%, and 5.13-9.62% respectively. Also, phosphorus, iron, copper, sodium, potassium, zinc, calcium and magnesium contents ranged from 3493-6216µg/g, 141-274µg/g, 169-294µg/g, 2196-5920µg/g, 5238-12625µg/g, 170-227µg/g, 0.711-1.11% and 0.080-0.143% respectively. It was concluded that supplementing cereal diets with legumes boosts the mineral and protein levels that may be absent or deficient in them. Hence, a formulate made from cereals and legumes would contain a better nutritional profile than a single cereal diet consumed alone for proper growth and development.

Keywords: Cereals, legumes, composite flour, formulation, malnutrition, nutrient profiling, mineral elements, functional properties of food