



Nutritional and Physical Properties of Bread Made from Sorghum Flour Supplemented with Cowpea Flour

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Abstract

Bread consumption has increased continuously in many developing countries due changing eating habits, and steady growing population. Composite flour is considered advantageous in developing countries as it reduces the importation of wheat flour and encourages the use of locally grown crops for flours. The aim of the study was to investigate nutritional and physical properties of sorghum-cowpea composite breads at different levels of cowpea flour substitution for human consumption. Sorghum and cowpea composite flours were formulated with the ratios of 80:20; 70:30 and 60:40. The proximate composition, physical, pH, colour and textural properties were determined. Crude protein, crude fat, crude fibre and ash contents increased significantly ($p < 0.05$) with increase in level of cowpea flour addition, but moisture content was not significantly different among the blends. The carbohydrates and total decreased with the substitution of cowpea flour. Average loaf height and loaf volume decreased significantly with increased cowpea flour, but loaf weight showed opposite trend with significant ($p < 0.05$) differences as cowpea flour increased. The significant ($p < 0.05$) highest loaf weight of 162.80 g was observed in a ratio of 60:40 composite bread compared to 136.83, 159.20 and 161.63 g observed in 100% wheat bread, 20 and 30% sorghum-cowpea composite breads respectively. The highest loaf volume and specific loaf volume of 437.25 cm³ and 3.46 ml/g were observed in 100% wheat bread compared lowest values of 303.97 cm³ and 1.87 ml/g respectively observed in 40% sorghum-cowpea composite bread. The mean lightness (L*) values of the flour samples ranged from 79.17 to 90.96, breadcrumbs 50.17 to 73.00 and bread crust 46.47 to 52.70. In conclusion, this study has shown that the use of cowpea flour in bread making is feasible and may increase the consumption levels of cowpea bread. The hardness and chewiness of the supplemented breads showed a significant increase compared with the wheat bread samples, the findings of the supplemented bread samples are recommended to be compare with the commercial bread samples for safe consumption.

Keywords: Composite flours, sorghum, cowpea, proximate composition, physical properties

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