

Development and Optimization of Wheat-Sorghum based Bread Enhanced with Orange Flashed Sweet Potato

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Abstract

Ethiopia is one of the developing countries with high prevalence of micronutrient deficiencies and protein energy malnutrition. Fortifying cereals through processing and conventional breeding can tackle micronutrient deficiency. Sorghum is a rich source of nutrients and most importantly, contains a diverse range of bioactive phenolic compounds. Orange Flashed Sweet Potato (OFSP) a source of food that contains useful β -carotene, starch, mineral, dietary fiber, and vitamins. The aim of this research is to develop and optimize sorghum and wheat based bread enhanced with orange flashed sweet potato. The main unit operations such as sorting, cleaning, weighing, washing, drying and milling were employed for raw material preparations. Standard procedures were employed to determine nutritional and anti-nutritional composition of composite flour and straight dough baking method was used to develop bread. Bread sample with high ratio had high value of color and taste acceptance. Addition of OFSP to the composite flour boosted the sensory acceptance and beta carotene content of wheat-sorghum based bread. Average value of ash content of composite flour was 0.99%. As the ratio of sorghum flour in composite flour increased, the ash content of composite flour increased. All treatments were not significantly different from each other in their crude protein content. Based on our optimization, sample of 75.4% wheat: 14.6% sorghum: 10% OFSP was selected for common optimum purpose while sample of (78.3% wheat: 11.7% sorghum: 10% OFSP), (70% wheat: 22.5% sorghum: 7.5% OFSP) and (80.6% wheat: 9.4% sorghum: 10% OFSP) were selected as optimum value for proximate value, mineral, and sensory characteristics respectively. Bread developed with maximum ratio of OFSP and Sorghum flour has high sensory acceptance, ash and fiber content. Generally, formulated flour might be advantageous as a means of reducing heavy demands on importation of bread wheat and to alleviate malnutrition in Ethiopia. The researcher recommends incorporation of sorghum and OFSP in wheat flour for bread development to improve nutrient density and reduce the importation of wheat and bread cost

Key Words: Bread, Baking, Optimization, Formulations, Wheat, Sorghum, Orange Flashed Sweet Potato, Sensory Analysis