

PROXIMATE COMPOSITION OF COMPLEMENTARY FOODS PREPARED FROM MALTED WHEAT AND SOYABEAN FLOUR BLENDS

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Introduction

Complementary foods are semi-solid or solid foods that are introduced to the diet of a breast- or formula-fed infant during the transition to an adult diet. The traditional homemade complementary foods of developing Countries are based on starchy staples usually cereals such as sorghum and maize. The nutritional problems associated with the use of these starch staples in complementary food preparations include: high bulk density and viscosity, low energy, protein and micronutrient contents^[1]. A good quality complementary diet must have high nutrient density, low bulk density, viscosity and appropriate texture^[1]. Several approaches have been suggested to improve the nutritional quality of complementary foods, including fortifying the locally produced cereal-based foods with specific nutrients and or blending them with other nutrient – rich foods to form nutritious composite mixture^[1]. Wheat flour contains 11.8% of protein, 1.9% fat, 0.7% ash, 1.0% fiber, 77.6% carbohydrate^[2]. Soybean contains 40.0 % protein, 20.0 % fat, 35.0 % carbohydrate and 5.0 % ash and source of iron, calcium, phosphorus and some B-vitamins^[3]. Malting involves germination of grains until the food-store (endosperm) which is available to support the development of the germ of the grain, undergo some degradation from enzymes. During malting, the germination of the grains facilitates the production/release of enzymes which helps to modify the grains (especially starch). Malting has been reported to improve the chemical, functional and pasting properties of flour. The proximate composition of food products is important in product formulation/development and utilization. Therefore, the objective of the research was to determine the proximate composition of complementary food prepared from malted wheat and soybean flour blends.

Materials and Methods

Wheat was obtained from Minna Mobil market Minna while soybean seeds was purchased from National Cereal Research Institute Badeggi, Bida(NCRI) Niger State. The wheat grains and soybean seeds were separately cleaned and sorted by winnowing and floatation to remove broken grains and extraneous materials. The seeds were soaked in tap water for 48 hours at ambient temperature. The steeped seeds were spread evenly in a raised platform for a period of 72 hours and sprinkled with water four times daily. The germinated seeds were thoroughly washed. This was followed by steaming for 10 minutes to pre cook the starch. The germinated grains and seeds were then dried in hot air oven at 120 °C for 12 hours. After drying, the germinated grains and seeds were dehulled, milled to flours sieved and packaged. Malted wheat and soybeans flours were mixed at different proportions (100:0; 75:25, 50:50, 25:75, 0:100), where 100% malted wheat flour was used as standard. The flour blends were subjected to proximate analysis^[4]. Proximate results obtained were subjected to analysis of variance^[5].

Results and Discussion

The proximate composition of malted wheat and soybean flour blends is presented in Table 1. There was significant ($p \leq 0.05$) difference in moisture, protein, ash and carbohydrate contents between control sample and the composite blends. The variation in moisture

content may be attributed to variations in drying kinetics between wheat and soybean. The variations in protein and ash contents could be attributed to high protein and ash contents in malted soybean than wheat flour. However, the crude fiber content increased with increase in soybean flour addition but there was no significant difference in crude fiber content between the control sample and the 75:25 (wheat: soybean) blend. The results of the proximate composition of complementary foods prepared from malted wheat and soybean flour blends revealed that the formulated blends will provide high nutrient density.

References

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Table 1: Proximate composition of malted wheat and soybean flour blends

Malted wheat: soybeans	Moisture (%)	Protein (%)	Fiber (%)	Ash (%)	Fat (%)	Carbohydrate (%)
100:0	7.81 ^a ±0.19	9.61 ^d ±0.61	1.69 ^c ±0.35	2.71 ^c ±0.29	4.43 ^{ab} ±0.27	81.57 ^a ±0.39
75:25	7.16 ^b ±0.04	14.75 ^c ±0.2	1.76 ^c ±0.02	3.06 ^{bc} ±0.06	4.07 ^b ±0.07	76.16 ^b ±0.20
50:50	6.00 ^c ±0.20	18.75 ^b ±0.2	2.72 ^b ±0.615	3.75 ^b ±0.25	4.38 ^{ab} ±0.16	70.44 ^c ±0.75
25:75	5.80 ^c ±0.20	19.31 ^b ±1.1	3.17 ^b ±0.16	3.25 ^b ±0.25	4.38 ^{ab} ±0.27	69.90 ^d ±1.88
0:100	5.09 ^d ±0.09	23.41 ^a ±2.2	4.60 ^a ±0.07	6.95 ^a ±0.05	4.93 ^a ±0.06	81.57 ^a ±0.39

Mean value of triplicate determinations. Mean value with different superscript in a column are significantly (p≤0.05) different from each other.