



QUALITY EVALUATION OF BISCUIT PRODUCED FROM WHEAT FLOUR AND MALTED BROWN FINGER MILLET USING DATE PALM AS SWEETENER

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Abstract

This study is to assess the quality evaluation of biscuit produced from wheat flour and malted brown finger millet using date palm as sweetener. To achieve the purpose of the study, the raw materials used (wheat flour, finger millet, margarine, powdered milk, eggs, baking powder and salt) been obtained, the result shows that the samples BFMW1, BFMWF2 and BFMWF3 has an increase in crude protein content which ranged from (8.14%, 9.91%, and 9.03%) respectively. This study has indicated that the use of such composite flours with high nutrient value is a good method to improve the nutritional excellence of baked goods like biscuits.

Introduction

Composite flour refers to the mixture of different concentration of non-wheat flours from cereals, legumes, roots and tubers with wheat flour or can be a mixture of flours other than wheat flour [1]. Because of the advantages that been derived from these composite flours, such as improved fiber content, there is continuous clamor among food scientist to utilize more flour that are obtained from various cereals in order to reduce waste, improve nutritional and health benefits and reduce cost of baked goods since these flours are relatively cheaper than the commonly used wheat flour. Brown finger millet (*Eleusin coracana (L.) Gaertn*), is a nutrient rich crop that is being used as food (grains in developing countries and as animal feed (straw) in developed countries indicating that it is considered as a poor man's food [2]. It is especially valuable as it contains the amino acid methionine, which is lacking in the diets of hundreds of millions of the poor who live on starchy staples such as cassava, plantain, polished rice, maize

meal. This study aimed to determine the nutritional quality of Biscuits made from different blends of wheat flour and malted brown finger millet sweetened with date powder.

Materials and Methods

This research was carried out at the Department of Food Science and Technology, Federal Polytechnic Bauchi. The raw materials used; wheat flour, finger millet, margarine, powdered milk, eggs, baking powder and salt were purchased from Muda Lawal market in Bauchi Metropolis. The brown finger millet flour was produced by washing of the grains, steeping, germinating, drying, and milling into a flour. The composite flours were formulated in four different ratios, and biscuit was produced from each blend according to the method described by [3]. Each sample blend was subjected to proximate analysis where Protein, Carbohydrate, Ash, Fat and fibre contents were determined according to standard method [4].

Results and Discussion

From table 1, it can be seen that samples BFMW1, BFMWF2 and BFMWF3 has an increase in crude protein content which ranged from (8.14%, 9.91%, and 9.03%) respectively. As compared to the control W (4.61%), there was a significant difference ($p < 0.05$) between malted brown finger millet samples from the control sample W. The protein content of finger millet is better balanced; it contains more lysine, valine than other millets [5]. The fat content showed biscuit produced from the control sample W to have the least value. The fatty acids of finger millet have the range between (21.1-24.7%). Finger millet contain essential fatty acids such as linolenic and palmitic acids which are essential for the development of brain and neural tissue. Samples of biscuit from malted brown finger millet was observed to also have an increase in crude fibre, during processing, it was observed that malted brown finger millet grains sprout out well, germination causes a remarkable conversion of non-soluble cereal dietary fibre into soluble dietary fibre. Ash content is a measure of the total amount of minerals present within a food, the ash content of the biscuit from samples of malted brown finger millet indicates a significant difference ($p < 0.05$) from the control sample W. The carbohydrate contents ranged from 45.62% - 78.55% in all the sample of biscuits produced. Sample W (100% Wheat) recorded the highest carbohydrate content (78.55%) followed by sample BFMWF1 (48.57%). It was perceived that carbohydrate content in the 100% wheat flour biscuit increased but increasing the levels of brown finger millet decreased the carbohydrate

content. Carbohydrates, which are plentiful in wheat flour, have been reduced by replacing with less carbohydrate flour; brown finger millet.

Conclusion

Results from this study has shown that the use of such composite flours with high nutrient value is a good method to improve the nutritional excellence of baked goods like biscuits.

Table 1. Result of Proximate Composition (%) of biscuit from wheat and malted Brown finger millet.

Sample	Protein (%)	Fat (%)	Fibre (%)	Ash (%)	Carbohydrate (%)
W	4.61±0.30 ^d	10.37±0.005 ^d	0.93±0.005 ^d	0.64±0.01 ^d	78.55±0.30 ^a
BFMF1	8.14±0.025 ^c	23.2±0.03 ^{bc}	4.39±0.16 ^c	3.44±0.01 ^c	48.57±0.22 ^b
BFMWF2	9.03±0.02 ^b	23.23±0.11 ^{ab}	5.27±0.05 ^b	3.59±0.05 ^b	46.17±0.39 ^c
BFMWF3	9.91±0.04^a	23.53±0.08^a	5.86±0.02^a	3.99±0.005^a	45.62±0.14^d

Means ± Standard Deviation between groups with different letters are significantly different (P<0.05)

Key: Sample WF = 100% Wheat flour (control)

Sample BFMWF1= Malted Brown Finger Millet Flour + Wheat Flour (BFM: WF= 20: 80)

Sample BFMWF₂ = Malted Brown Finger Millet Flour + Wheat Flour (BFM: WF = 30: 70)

Sample BFMWF3 = Malted Brown Finger Millet Flour + Wheat Flour (BFM: WF = 50: 50)

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