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Sensory acceptability of value added multigrain biscuit with different level's of wheat flour, maize flour and sesame seed

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Abstract

Present study was to evaluate the impact of the wheat flour and sesame seed addition on the sensory quality of biscuit, for that purpose value added multigrain biscuit was prepared with different levels of wheat flour, maize flour and sesame seed. Sensory quality was evaluated on parameters of colour and appearance, body and texture, taste and flavor and overall acceptability by using 9 point hedonic scale. There was four treatments which were replicated five times. In varying proportion of wheat flour (T₀ 80%, T₁70%, T₂65%, T₃60%) and maize flour (20%) use to every treatment and sesame seed flour (T₁10%, T₂15%, T₃20%) were incorporated to assess the sensory acceptability of the best treatment. Sensory score for treatment T₃ (60% Wheat Flour + 20% Maize Flour + 20% Sesame Seed) was found to be the best i.e. 8.48 for color and appearance and 7.82 for body and texture and best flavour score was 8.58 and overall acceptability was found better for T₃.

Keywords: Multigrain Biscuit, Wheat Flour, Maize Flour, Sesame Seed, Sensory Acceptability

1. Introduction

Bakery products have become popular in India as evidenced by two fold increase in their production during the last five years. Among all snack foods, biscuits form the most popular snack item and offer certain advantages such as cheaper than conventional snack items, easy to use during travel or at home, because of their availability in varieties of convenient pack sizes and longer shelf life (Crassina *et al.* 2012) [4]. Biscuit are defined as a small thin crisp cake made from leavened dough. Biscuits are an important baked product in human diet and are usually eaten with the tea and are also use as weaning food for infants. Biscuits are one of the popular cereals foods; apart from bread, consumed in Nigeria. They are ready to eat, convenient and inexpensive food products, containing digestive and dietary principles of vital importance (Kulkarni, 1997) [5]. Biscuits are high in carbohydrates, fat, and calorie but low in fiber, vitamin, and mineral which make it unhealthy for daily use (Serrem *et al.* 2011) [6, 8]. Moreover, biscuits have only about 6–7% protein (Agarwal 1990) [1]. The unique bread making properties of wheat flour are due to its gluten protein that, when hydrates, forms strong, cohesive douse that retains gas and produces a light, aerated baked product. Maize (*Zea mays*) a major source of carbohydrates, protein vitamin B, vitamin A (Yellow maize) and minerals. Diets that rely heavily on corn may require the consumption of complementary foods to supplement its deficiency in certain amino acids and vitamins. It is deficient in lysine and tryptophan. It is highly nutritious and beneficial to the body. It has higher content of protein and fat as compared to other cereals. It is a potent antioxidant that guards body from harming by free radicals responsible for cellular damage and/or cancer. It has the potential to alleviate pain and possess analgesic activity as well. Sesame seeds are an excellent source of copper, a very good source of manganese, and a good source of magnesium, copper, vitamin E, thiamine, calcium, phosphorus, iron, zinc, molybdenum, phytosterols and selenium. By weight, about half the seed is fat—mostly unsaturated.

Material and Methods

The experimental work was carried out in the research laboratory of department of Dairy, Technology, Warner college of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad.

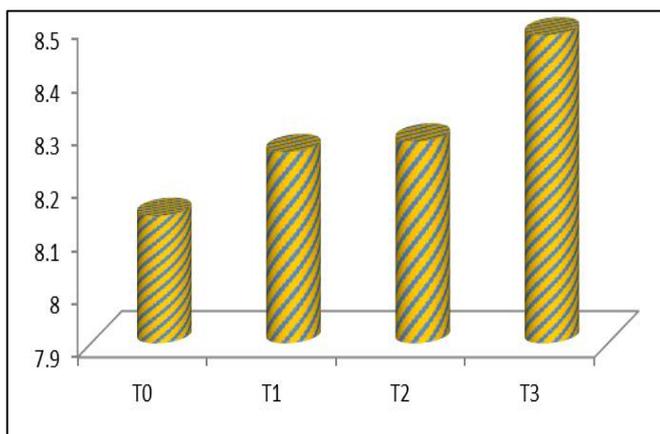
Wheat flour, maize flour and sesame seed were obtained from the local market of Allahabad city. Mixed cereal flour based biscuit prepared by Wheat flour, maize flour and sesame seed and butter, skim milk powder and sugar. There were total four combinations. Each was prepared in five replications. The different treatment combinations used in the experimental are as follows

T₀ = wheat flour 80%+ maize flour 20%
 T₁= wheat flour 70%+ maize flour 20%+10% sesame seed
 T₂= wheat flour 65%+ maize flour 20%+15% sesame seed
 T₃= wheat flour 60%+ maize flour 20%+20% sesame seed
 For the preparation of mixed multigrain biscuit, added wheat flour, maize flour and sesame seed and sesame seed and addition of butter 20% and addition of sugar 40% and addition of skim milk powder 2% then mixed properly and addition of skim milk powder 3% and addition of 20 ml. water in flour mix then kneading and preparation of dough and on wooden board with rolling pin cutting then preheating oven (160 °c for 20 min) before baking cooling at room temperature (27-30 °c) then packed and until used.

Results and Discussions

Sensory analysis: It was found that the highest score was observed in treatment T₃ in which value added multigrain biscuit was prepared by wheat flour 60% with maize flour 20% and 20% sesame seed peculiar taste.

Colour and appearance: The sensory score of colour and appearance of the formulated product clearly indicated that treatment which had combination of wheat flour (60%), maize flour (20%) and sesame seed (20%) had the significantly highest score followed by T₃ (8.48) and T₂ (8.28) and T₁ (8.26), T₀ (8.14). thus making it quite obvious that the addition of wheat flour and maize flour and sesame seed increased the colour and acceptability of value added biscuits. A numerical hedonic scale ranging from 1 to 9 (1 is very bad and 10 for excellent) was used for sensory evaluation. Ten experienced judges participated in the test.

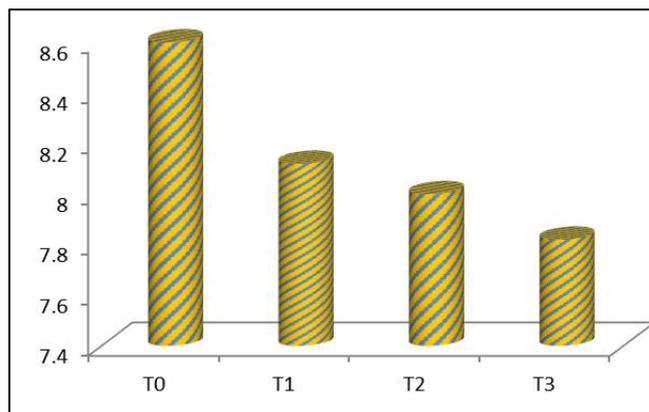


Average Colour and Appearance Percent in Control and Experimental Multigrain Biscuit.

Body and texture

Average sensory scores of body and texture of the formulated product clearly indicated that treatment T₀ biscuits prepared from wheat flour (80%) with addition of (20%) maize flour had the highest score followed by T₀ (8.60), T₁ (8.12) and T₂ (8.00) and T₃ (7.82). thus making it quite obvious that the addition of wheat flour and maize flour (80%, 20%) improve

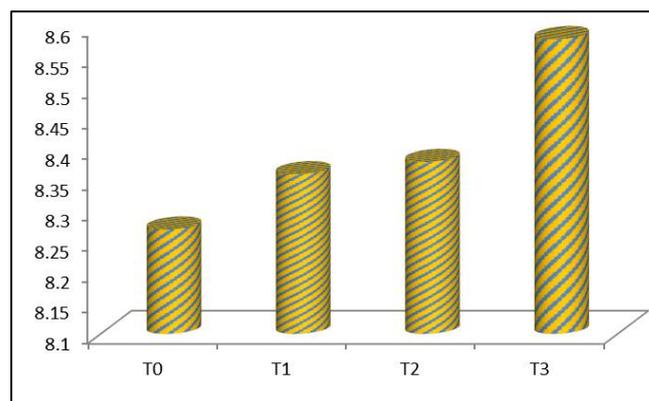
the body and texture.



Average Body and Texture Percent in Control and Experimental Multigrain Biscuit

Flavour and taste

The treatment T₃ (8.54) which had combination of biscuit wheat flour 60% and maize flour 20% and 20% sesame seed had a highest score followed by T₂ (8.38) and T₁ (8.36) T₀ (8.27). Thus making it quite obvious that the addition of wheat flour (60%), maize flour (20%) and sesame seed (20%) improve the taste and flavour of value added multigrain biscuit. the variation in flavour and taste was probably due to the effect of some development of chemical.



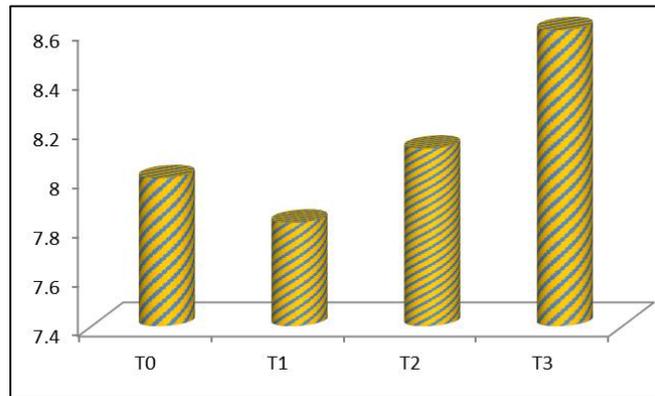
Average Flavour and Taste Percent in Control and Experimental Multigrain Biscuit

Table 1: Sensory characteristics of multigrain biscuit wheat flour (80%, 75%, 65%, 60%) and supplemented with maize flour 20% and 10%, 15% and 20% sesame seed mixed biscuit.

Biscuit Samples	Colour and Appearance	Body and Texture	Flavour and Taste	Overall Acceptability
T ₀	8.14	8.60	8.27	8.00
T ₁	8.26	8.12	8.36	7.82
T ₂	8.28	8.00	8.38	8.12
T ₃	8.48	7.82	8.54	8.60

Overall acceptability

The average sensory score of body and texture of formulated product clearly indicated that treatment T₃ (8.60) which had combination of biscuit wheat flour 60% and maize flour 20% and sesame seed 20% had highest score T₃ (8.60) and T₂ (8.12) and T₀ (8.00) and T₁ (7.82). This making it quite obvious that the addition multigrain cereal improves the overall acceptability of value added.



Average Overall Acceptability Percent in Control and Experimental Multigrain Biscuit

Body of the Product



Conclusion

The study showed that the quality of multigrain biscuit could be improved with supplementation of sesame seed and maize flour, in term of protein, fiber, ash and vitamins, sensory evaluation of the multigrain biscuit showed that there were no significant difference in all the sample and control. The whole grain flour biscuit incorporation of maize flour and sesame seed in the biscuit will also enhance nutritional quality analysis and organoleptic evaluation T₃ 60% wheat flour and 20% maize flour and 20% sesame seed supplement biscuit is found to the best

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