

SENSORY PROPERTIES OF BREAD PRODUCED USING DIFFERENT SOURDOUGH CULTURES

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Introduction

Bread is produced by baking the dough formed from the mixture of wheat flour, yeast, salt and water. However, there may be additional ingredients such as milk and milk solid. Sourdough bread is an important fermented bread product of cereal flour and water. A stock flour dough is inoculated with microbial starter ("mother culture") which is constantly renewed using specified recipes and ripening conditions.² Dough is usually leavened by bread yeast, which ferment dough sugar and produces mainly carbon dioxide and alcohol. However, other gas producing microorganisms such as wild yeasts, coliform bacteria, saccharolytic species, heterofermentative lactic acid bacteria and various naturally occurring mixtures of these organism have been used for leavening of dough instead of bread yeast alone.²

Fermentation is central to acceptability in flavour, as chemically acidified bread prepared without pure commercial starter cultures are not well scored in sensory preference assessments.³ The synergistic metabolic activities of microorganism produce acidification or souring influencing the final characters of the bread notably the texture and generate typical flavour compounds yielding typical sourdough sensory attributes.⁴ Lactic acid bacteria contribute to the production of safer foods by inhibiting the growth of pathogenic microbes toxic contaminants. Certain lactobacillus bacteria, in the process of souring of dough, produce an enzyme that breaks down a protein to be toxic to people with celiac disease hence sour dough breads are used as functional foods.²

Materials and Methods

The materials used for this research work includes hard wheat flour, salt, yeast powder, baking fat (some margarine), granulated sugar, vegetable oil and milk powder. These were purchased from Minna central market, Niger State. Sourdough bacteria mother culture was prepared as reported² (Table 1) and sourdough bread was prepared by the straight dough method. The bread was evaluated for sensory characteristics by a panel of 15 judges using a 9-point hedonic scale¹ with 1 representing extremely disliked and 9 representing extremely liked.

Results and Discussions

The acceptability of the sour dough bread samples is shown in Table 1. The results showed that bread produced with 3ml lactic acid culture had higher sensory scores in all parameters measured. These sensory parameters were affected by the fermentation from the acid culture. The results were in agreement with the earlier reports of the enhancement of sensory properties of baked bread by use of sour dough cultures.

Table 1: Sensory Characteristics of bread Prepared using different Sourdough Starter Cultures

Parameters Evaluated	Bread Samples				
	To	T ₁	T ₂	T ₃	T ₄
Aroma	4.60 ^a	8.00 ^e	7.33 ^d	6.33 ^c	5.53 ^d
Crumb colour	5.87 ^a	7.73 ^b	5.87 ^a	5.93 ^a	5.67 ^a
Crust colour	5.27 ^a	8.13 ^d	6.73 ^c	6.20 ^{bc}	5.40 ^{ab}
Evenness of Bake	2.93 ^a	3.20 ^a	3.00 ^a	3.20 ^a	3.07 ^a
Taste	6.00 ^a	8.40 ^c	7.73 ^c	6.53 ^{ab}	7.00 ^b
Texture	4.73 ^a	7.47 ^c	6.33 ^b	6.07 ^b	7.67 ^c
Overall Acceptability	6.93 ^a	7.87 ^a	7.27 ^a	7.20 ^a	7.20 ^a

Keys: To=control sample(100%wheat flour), T₁=3ml lactic acid bacteria culture only, T₂=0.25g yeast+2ml lactic acid bacteria culture, T₃=0.50g yeast+1.5ml lactic acid bacteria culture, T₄=0.75g yeast+1ml lactic acid bacteria culture

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