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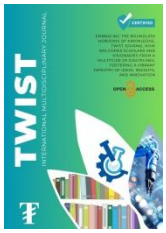

Shelf Life and Acceptability of Banana Loaf Bread

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Abstract
The study explored the shelf life and sensory acceptability of banana loaf bread made from composite flours of wheat and banana. Using experimental and descriptive-survey design, banana flour was produced from steamed, sliced, sun-dried, and milled Kardaba bananas. Two flour blend proportions (1:3 and 1:4 banana-to-wheat) were evaluated. The bread was assessed for taste, appearance, flavor, texture, and general acceptability. The 1:3 blend showed higher consumer acceptability, while the 1:4 blend exhibited similar, albeit slightly lower ratings. Shelf life was assessed under room temperature, refrigeration, and packaging. Results indicated longer shelf stability under refrigeration and proper packaging. Significant differences were observed both between proportions and among three public elementary schools. The findings suggest potential for community-based banana flour enterprises and health-focused bread products.

Keywords
Banana flour, Sensory evaluation, Shelf life, Composite bread, Acceptability, Loaf bread

INTRODUCTION

Banana is a major crop in San Miguel, Surigao del Sur. Beyond being a food staple, it offers income opportunities for local communities, especially when processed into flour. Banana loaf bread emerges as a nutritious, economical alternative, promoting health and sustainability. However, consumer acceptance and shelf stability of such products remain unexplored. This study addresses that gap.

MATERIALS AND METHODS

Research Design

The study employed an experimental and descriptive-survey design. The experimental aspect focused on producing banana loaf bread using banana flour blended with wheat flour at two different proportions (1.3 and 1.4). The descriptive-survey aspect involved sensory evaluation to determine shelf life and consumer acceptability. A checklist was used as the primary tool for evaluation. This checklist, also referred to as a tick list or chart, allowed respondents to assess specific sensory indicators such as taste, texture, flavor, appearance, and general acceptability. According to Hodder Education & Hachette UK Company (2017), a checklist can serve as either a quantitative or qualitative tool. When used with binary (yes/no) indicators, it functions quantitatively; when used to describe observations, it serves a qualitative purpose. Thus, this dual-purpose tool enabled comprehensive data collection on the sensory attributes and quality of the loaf bread.

Preparation of Banana Flour

Kardaba bananas were steamed, peeled, sliced, soaked in 5% citric acid, sun-dried to 10% moisture, milled, and sifted.

Formulation of Banana Loaf Bread

Two bread formulations were tested:

- 1.3 Proportion: 3/4 kg banana flour, 2.25 kg wheat flour
- 1.4 Proportion: 3/4 kg banana flour, 3.0 kg wheat flour. Other ingredients (sugar, salt, milk, yeast, vanilla, eggs, lard, margarine, water) were constant. Dough was mixed, kneaded, proofed (1.5 hr), baked (200°C), cooled, and packaged.

Research Respondents

Respondents included teachers and Grades 5-6 pupils from three schools: San Miguel Central, Tina Central, and Carromata Central. Using purposive sampling, 271 participants evaluated sensory qualities using a 9-point hedonic scale. Shelf life was monitored under varying storage conditions.

RESULTS

Table 1 Level of Acceptability of Banana Loaf Bread According to Proportion

Indicators	1.3 Proportion	Adjectival Rating	1.4 Proportion	Adjectival Rating	Overall Mean	Overall Rating
Taste	8.45	Extremely Desirable	8.26	Extremely Desirable	8.34	Extremely Desirable
Appearance	7.91	Very Desirable	7.54	Very Desirable	7.73	Very Desirable
Flavor	8.16	Extremely Desirable	7.99	Very Desirable	8.08	Extremely Desirable
Texture	7.70	Very Desirable	7.44	Very Desirable	7.57	Very Desirable
General Acceptability	7.98	Very Desirable	7.65	Very Desirable	7.82	Very Desirable
Overall Mean	8.04	Extremely Desirable	7.78	Very Desirable	7.91	Very Desirable

Table 2 Level of Acceptability of Banana Loaf Bread among the Three Schools

Indicators	SMCES	Adjectival Rating	TCES	Adjectival Rating	CCES	Adjectival Rating	Overall Mean	Overall Rating
Taste	8.02	Extremely Desirable	8.48	Extremely Desirable	8.38	Extremely Desirable	8.29	Extremely Desirable
Appearance	7.16	Very Desirable	8.14	Extremely Desirable	7.91	Very Desirable	7.74	Very Desirable
Flavor	8.00	Extremely Desirable	7.97	Very Desirable	8.15	Extremely Desirable	8.04	Extremely Desirable
Texture	6.73	Moderately Desirable	8.23	Extremely Desirable	7.70	Very Desirable	7.55	Very Desirable
General Acceptability	7.10	Very Desirable	8.27	Extremely Desirable	7.98	Very Desirable	7.78	Very Desirable
Overall Mean	7.40	Very Desirable	8.22	Extremely Desirable	8.04	Extremely Desirable	7.88	Very Desirable

Table 3 Shelf Life of Banana Loaf Bread Under Different Conditions

Storage Condition	Shelf Life (Days)
Room Temperature	3
Refrigerated	5-7
Properly Packaged	5-7

Table 4 Significant Difference in Acceptability According to Proportion

Variable	Computed t	P-value	Conclusion
Acceptability by Proportion	6.83	0.002	Significant

Table 5 Significant Difference Among Schools

Source of Variation	DF	SS	MS	F	P-value	Conclusion
Factor	2	1.817	0.909	6.26	0.014	Significant
Error	12	1.742	0.145			
Total	14	3.560				

DISCUSSION

Higher banana content improved sensory ratings, particularly for taste and flavor. Differences across schools may be attributed to demographics or food familiarity. Refrigeration extended shelf life. These findings align with previous studies highlighting banana flour's nutritional and functional benefits.

CONCLUSION

Banana loaf bread using 1.3 proportion exhibited high acceptability. Proper packaging and refrigeration extend shelf life up to 7 days. Community-based banana flour initiatives can enhance income and food security.

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DECLARATION OF CONFLICT

The author declares no conflict of interest in the conduct of this study.

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