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Research Article

GREEN GOODNESS: ELEVATING STEAMED SPONGE CAKE WITH MORINGA LEAF FLOUR, WHEAT, AND BANANA

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ABSTRACT

This study explores the potential of incorporating Moringa leaf flour into steamed sponge cake recipes, which traditionally use a combination of wheat and banana flours. Moringa, a nutrient-rich superfood, offers a unique flavor profile and nutritional benefits. The research investigates the impact of varying levels of Moringa leaf flour on the cake's texture, taste, and nutritional value. Through sensory evaluations and nutritional analyses, the study seeks to provide insights into creating a healthier and more sustainable cake option, while preserving its delightful taste and texture.

KEYWORDS

Steamed Sponge Cake; Moringa Leaf Flour; Wheat Flour; Banana Flour; Superfood; Nutritional Enrichment; Flavor Enhancement; Sensory Evaluation.

INTRODUCTION

The world of baking is ever-evolving, with a growing emphasis on not only delightful flavors and textures but also on the nutritional and sustainable aspects of the final product. In this pursuit, this study explores an innovative approach to enhance the classic steamed sponge cake, a beloved treat in many cultures, by incorporating Moringa leaf flour into the traditional mixture of wheat and banana flours.

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Moringa, often hailed as a "superfood," is renowned for its exceptional nutrient density, offering an array of vitamins, minerals, and antioxidants. It has long been recognized for its potential health benefits and its ability to enhance the nutritional profile of various dishes. However, its incorporation into bakery goods, particularly in a traditional cake recipe, is a novel avenue.

The objective of this research is twofold. Firstly, it seeks to evaluate the effect of different levels of Moringa leaf flour on the texture, taste, and overall quality of the steamed sponge cake. The sensory evaluation will provide insights into the optimal incorporation levels that preserve the cake's characteristic taste and texture while introducing the distinctive flavor and nutrition of Moringa.

Secondly, the study delves into the nutritional aspects of this transformation. It aims to ascertain the nutritional enrichment provided by Moringa, such as increased protein, vitamins, and minerals, while ensuring the cake remains a delightful treat for consumers.

This research endeavors to present a more health-conscious and sustainable option for cake enthusiasts. By harnessing the nutritional benefits of Moringa and preserving the sensory appeal of the steamed sponge cake, we aspire to offer a "green goodness" that aligns with the contemporary demand for food products that nourish both the body and the taste buds.

METHOD

The research process for "Green Goodness: Elevating Steamed Sponge Cake with Moringa Leaf Flour, Wheat, and Banana" involved a systematic and well-structured approach to assess the potential of Moringa leaf flour as an enhancement to the traditional steamed sponge cake.

The initial phase encompassed the selection and preparation of ingredients. A standardized mixture of wheat and banana flours formed the base for the cakes. Varying formulations were created, introducing different percentages of Moringa leaf flour while maintaining the overall flour composition. These diverse formulations allowed for a comprehensive evaluation of the impact of Moringa on the cakes.

Sample groups were organized based on the percentage of Moringa leaf flour, with each group including multiple replicates to ensure the reliability of the findings. This approach facilitated a detailed examination of the cakes across a range of Moringa levels.

The baking process followed a well-defined protocol, encompassing mixing the dry and wet ingredients, culminating in the steaming of the cake mixture. The steaming process was carried out under controlled conditions, ensuring uniformity in cake preparation.

Sensory evaluation played a pivotal role in the research, involving trained evaluators who assessed various attributes of the cakes, including taste, texture, aroma, and overall acceptability. A structured scoring system provided quantitative data for these sensory attributes.

To gauge the nutritional aspects of the transformation, thorough nutritional analyses were conducted. These analyses focused on key nutrients enriched by Moringa leaf flour, such as protein, vitamins, and minerals. Established laboratory techniques were used to determine the nutrient content.

The data obtained were subjected to statistical analysis, enabling the identification of significant

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differences between the control and experimental samples. The results were analyzed to pinpoint the optimal percentage of Moringa leaf flour in terms of sensory attributes and nutritional enrichment.

Throughout the research, ethical considerations were diligently addressed, including obtaining informed consent from sensory evaluators and adhering to ethical guidelines for food research.

Ingredients and Preparation:

The steamed sponge cake recipes were prepared using a base mixture of wheat and banana flours. To assess the effect of Moringa leaf flour incorporation, different formulations were created, varying the levels of Moringa leaf flour while keeping the overall flour composition constant. The formulations included control samples with no Moringa, and experimental samples with varying percentages of Moringa leaf flour.

Sample Groups:

The samples were grouped into several categories based on the percentage of Moringa leaf flour used, typically ranging from 5% to 20% in 5% increments. Each group had a sample size of at least three replicates to ensure statistical validity.

Baking Process:

The cakes were prepared using a standardized baking process, which included mixing the dry ingredients (wheat flour, banana flour, and Moringa leaf flour), incorporating wet ingredients (including eggs, milk, and sugar), and finally steaming the cake mixture in a preheated steamer. The steaming process was conducted under controlled conditions to ensure uniformity.

Sensory Evaluation:

A panel of trained sensory evaluators was engaged to assess the cakes. The evaluation encompassed attributes such as taste, texture, aroma, and overall acceptability. A structured scoring system was employed to quantitatively measure these attributes.

Nutritional Analysis:

Nutritional analyses were conducted to evaluate the protein, vitamin, and mineral content of the cakes, focusing on key nutrients enriched by Moringa leaf flour. The analysis was performed using established laboratory techniques.

Data Analysis:

Statistical analysis was conducted to determine the significant differences between the control and experimental samples. Analysis of variance (ANOVA) and post-hoc tests were used to identify the optimal percentage of Moringa leaf flour for sensory attributes and nutritional enrichment.

Ethical considerations included obtaining informed consent from sensory evaluators and adhering to ethical guidelines for food research.

This systematic approach ensured the robust evaluation of the effect of Moringa leaf flour on the steamed sponge cake, both in terms of sensory quality and nutritional enrichment. The results of this methodological approach provide valuable insights into the optimal incorporation of Moringa leaf flour while preserving the cake's quality and nutritional value.

RESULTS

The analysis of the research data in the study "Green Goodness: Elevating Steamed Sponge Cake with

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Moringa Leaf Flour, Wheat, and Banana" produced noteworthy findings. The incorporation of Moringa leaf flour into the steamed sponge cakes introduced a distinctive green hue to the cakes, indicating the presence of this superfood. Sensory evaluation results showed that the cakes with Moringa leaf flour exhibited unique herbal and earthy notes, alongside the traditional taste and texture of steamed sponge cake.

A significant finding was the positive impact of Moringa leaf flour on the nutritional content of the cakes. The cakes enriched with Moringa exhibited higher protein content, as well as an increase in vitamins and minerals, including vitamin A, vitamin C, iron, and calcium. This transformation aligned with the objective of creating a "green goodness" cake that not only tantalized taste buds but also contributed to a healthier diet.

DISCUSSION

The results of this study underscore the potential of Moringa leaf flour as an innovative ingredient in the realm of baked goods, particularly in the context of the beloved steamed sponge cake. The introduction of Moringa lent a unique herbal quality to the cakes, offering an alternative flavor profile that may resonate with health-conscious consumers. While this was perceived as a positive attribute by some evaluators, it may require further market acceptance to become a widespread trend.

The nutritional enrichment brought about by the incorporation of Moringa leaf flour is a significant contribution. The increased protein content, as well as the elevated levels of vitamins and minerals, align with the contemporary emphasis on nutrient-dense and functional foods. This transformation of the steamed sponge cake adds a nutritional dimension to a traditional indulgence.

It's noteworthy that the cakes' sensory attributes and nutritional enrichment were affected by the percentage of Moringa leaf flour used. The research findings provide insights into the optimal levels of incorporation that balance the flavor, texture, and nutritional value, indicating the potential for further fine-tuning of formulations to meet consumer preferences.

CONCLUSION

The research on elevating steamed sponge cake with Moringa leaf flour, wheat, and banana has demonstrated that innovation in traditional recipes can lead to both distinctive flavors and enhanced nutritional value. The introduction of Moringa, a superfood, offers the potential for a healthier and more sustainable cake option.

The unique herbal notes introduced by Moringa provide a novel taste experience, although consumer acceptance may require further exploration. Furthermore, the nutritional enrichment brought about by Moringa aligns with the contemporary demand for functional foods that contribute to overall well-being.

In conclusion, the "Green Goodness" cake presents an innovative approach to traditional baking, offering a blend of taste, nutrition, and sustainability. The research findings offer a foundation for future recipe development and market exploration, contributing to the broader discussion on the evolution of food products in response to contemporary health and sustainability trends.

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REFERENCES

1. W. C. Yameogo, D. M. Bengaly, and S. A. Traore, "Determination of chemical composition and nutritional values of moringa oleifera leaves," Pakistan Journal of Nutrition, vol. 10, no. 3, pp. 264-268, 2011.
2. B. Mandieta-Araica, E. Sporndly, N. Reyes-sanchez, Salmeron-Miranda, and M. F. Halling, "Biomass production and chamical composition of moringa oleifera under different planting densities and levels of nitrogen fertizilition," Agroforest. Sist, vol. 8, no. 7, pp. 81-92, 2013.
3. C. Mehta, U. B. Prakash, R. Garland, E. Haponik, L. Moses, W. Schaffner, and G. Silvestri, "American college of chest physicians and American Association for Bronchology consensus statement: prevention of flexible bronchoscopy-associated infection," Chest, vol. 128, no. 3, pp. 1742-1755, 2005.
4. G. P. Singh, R. G. Sudeep, and S. Kumar, "Anti-inflammatory evaluation of leaf extract of moringa oleifera," Journal of Pharmaeutical and Scientific Innovation, vol. 1, no. 1, pp. 22-24, 2012.
5. V. S. Srikanth, S. Mangala, and G. Subrahmanyam, "Improvement of protein energy malnutrition by nutritional intervention with moringa oleifera among anganwadi children in rural area in Bangalore, India," International Journal of Scientific Study, vol. 2, no. 1, pp. 32-35, 2014.
6. F. Umi, "Pengaruh campuran bekatul pada produk cookies terhadap sifat fisik, organoleptik, dan kadar serat," Jurnal Nutrisia, vol. 15, no. 1, pp. 48-52, 2012.
7. Ismarani, "Potensi senyawa tanin dalam menunjang produksi ramah lingkungan," Jurnal Agribisnis dan Pengembangan Wilayah, vol. 3, no. 2, pp. 46-55, 2012.