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FORMULATION, ANALYSES, AND ACCEPTABILITY OF TELESCOPE SNAIL AND SQUASH SKINLESS LONGGANISA

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Abstract: This study developed and evaluated a value-added skinless longganisa using telescope snail (Telescopium telescopium) meat and squash (Cucurbita maxima) pulp as sustainable alternatives to conventional pork. The study aimed to determine the sensory qualities, general acceptability, shelf life, microbial safety, and nutritional composition of the formulated product. An experimental-developmental research design was employed using three formulations: Treatment A (75g telescope snail meat and 25g squash), Treatment B (50g telescope snail meat and 50g squash), and Treatment C (25g telescope snail meat and 75g squash). Sensory evaluation was conducted among 10 semi-trained evaluators and 100 consumers using a 9-point hedonic scale. Data gathered were statistically analyzed using Analysis of Variance (ANOVA) and Kruskal-Wallis test. Results revealed that Treatment B obtained the highest ratings in appearance, aroma, taste, texture, and overall acceptability. Statistical findings showed no significant differences in appearance, aroma, and texture, while significant differences were observed in taste and general acceptability among treatments. Shelf-life evaluation revealed that the product remained acceptable for 30 days under chilling conditions, while spoilage was observed on the 35th day. Microbial analysis confirmed the absence of Salmonella and acceptable microbial counts based on Philippine standards. Proximate analysis revealed that the product contained 10.93% fat, 9.34% protein, and a low caloric value of 31 kcal. The study concluded that telescope snail and squash can be utilized as nutritious, safe, sustainable, and acceptable ingredients in the production of skinless longganisa.

Keywords: Telescope Snail, Squash, Skinless Longganisa, Alternative Protein, Food Innovation, Sensory Evaluation.

I. INTRODUCTION

The importance of consuming nutritious and balanced diets has been consistently emphasized as a key factor in maintaining health and preventing disease. However, food consumption is influenced not only by nutritional needs but also by culture, tradition, and daily practices. This condition encouraged researchers and food developers to create innovative food products that improve nutritional quality while preserving consumer acceptability and cultural identity.
In the Philippines, processed meat products such as longganisa remain highly popular because of their affordability, convenience, and distinct flavor. Despite its popularity, conventional longganisa is commonly associated with high fat, sodium, and cholesterol content, which may contribute to long-term health risks when consumed excessively. As health consciousness among consumers continues to increase, food innovation efforts increasingly focus on developing healthier alternatives through ingredient reformulation and incorporation of alternative protein sources and vegetables.

One promising alternative ingredient is telescope snail (Telescopium telescopium), a mangrove-associated mollusk recognized as a valuable source of protein, amino acids, calcium, and iron. Previous studies emphasized the nutritional potential of mollusks and their possible application in processed food products. Likewise, squash (Cucurbita maxima) is recognized as a nutrient-rich vegetable containing beta-carotene, dietary fiber, vitamins, and antioxidants that contribute to nutritional enhancement, texture improvement, and moisture retention in food systems.

In Mambusao, Capiz, telescope snails and squash are locally abundant but remain underutilized in food product development. The productive utilization of these local resources may contribute to healthier food alternatives, sustainable food processing, and community livelihood opportunities. Thus, the study was conducted to formulate, analyze, and evaluate telescope snail and squash skinless longganisa as a value-added and nutritionally improved food product.

OBJECTIVES OF THE STUDY

This study aimed to formulate and evaluate a value-added meat product, specifically skinless longganisa made from telescope snail and squash. Specifically, it sought to:

1. Determine the sensory qualities of the telescope snail and squash skinless longganisa in terms of appearance, aroma, taste, and texture;

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2. Determine the general acceptability of the telescope snail and squash skinless longganisa based on its sensory qualities;
3. Find out if there is a significant difference in the sensory qualities of telescope snail and squash skinless longganisa among the three treatments;
4. Find out if there is no significant difference in the general acceptability of telescope snail and squash skinless longganisa among the three treatments;
5. Determine the shelf life of the telescope snail and squash skinless longganisa in terms of chilling temperature; and,
6. Submit the best treatment of telescope snail and squash skinless longganisa for microbial and proximate analysis.

II. METHODOLOGY

Methods of Research

The study employed an experimental-developmental research design. The experimental aspect focused on the preparation and evaluation of different formulations of telescope snail and squash skinless longganisa, while the developmental aspect focused on the development of a value-added food product utilizing locally available resources.

Treatments of the Study

Three formulations of telescope snail and squash skinless longganisa were prepared:
Treatment A – 75g telescope snail meat and 25g squash
Treatment B – 50g telescope snail meat and 50g squash
Treatment C – 25g telescope snail meat and 75g squash
Each treatment was prepared in three replications to ensure consistency and reliability of the results.

Respondents of the Study

The study involved 10 semi-trained evaluators and 100 randomly selected consumers. The semi-trained evaluators assessed the sensory qualities of the product, while the consumers evaluated the general acceptability of the formulated skinless longganisa.

Research Instrument

A researcher-made sensory evaluation questionnaire utilizing a 9-point hedonic scale was used to evaluate the product in terms of appearance, aroma, taste, texture, and overall acceptability. The instrument underwent validation by experts before administration.

Data Gathering Procedure

The telescope snail meat and squash were prepared and processed into skinless longganisa formulations following standardized food preparation procedures. The finished products were cooked and presented to the evaluators and consumers during sensory evaluation. Shelf-life evaluation was conducted under chilling temperature conditions by observing daily changes in appearance, odor, texture, and spoilage indicators. The formulation that obtained the highest acceptability rating was submitted to Negros Prawn Producers Cooperative Analytical and Diagnostic Laboratory, Inc. for microbial and proximate analyses.

Statistical Treatment of Data

The sensory evaluation data were statistically analyzed using Analysis of Variance (ANOVA) and Kruskal-Wallis test at 0.01 level of significance to determine significant differences among the formulations. Weighted means were used to determine the sensory qualities and general acceptability of the product.

III. RESULTS AND DISCUSSION

The findings revealed that Treatment B, consisting of 50g telescope snail meat and 50g squash pulp, obtained the highest ratings in appearance, aroma, taste, texture, and overall acceptability among the three treatments. The balanced proportion of telescope snail meat and squash contributed to desirable flavor, texture, and sensory qualities preferred by both evaluators and consumers.

Statistical analysis revealed no significant differences in appearance, aroma, and texture among treatments. However, significant differences were observed in taste and overall acceptability, indicating that the proportion of telescope snail meat and squash significantly affected consumer preference and product palatability. Treatment B was interpreted as "Liked Extremely" based on the hedonic scale evaluation.

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Shelf-life evaluation revealed that the product remained acceptable for 30 days under chilling temperature conditions, while spoilage signs became noticeable on Day 35. The findings indicated that storage temperature played an important role in preserving product quality and delaying spoilage.

Microbial analysis confirmed that Treatment B was microbiologically safe for human consumption. The product showed the absence of Salmonella and maintained acceptable microbial counts based on Philippine FDA and DOST standards. These findings suggest that proper preparation, sanitation, and storage procedures contributed to product safety and quality.

Proximate analysis further revealed that the product contained 10.93% fat, 9.34% protein, and a low caloric value of 31 kcal. These findings indicate that telescope snail and squash skinless longganisa may serve as a healthier alternative to conventional pork longganisa because of its reduced fat and calorie content while maintaining acceptable protein composition.

Overall, the findings demonstrated that telescope snail and squash may be effectively utilized in developing a sustainable, nutritious, acceptable, and value-added processed food product using locally available resources.

IV. CONCLUSION

Based on the findings of the study, the following conclusions were drawn:
The formulation of telescope snail and squash skinless longganisa was successfully developed as a value-added food product utilizing locally available and underutilized resources. Among the three formulations, Treatment B consisting of 50g telescope snail meat and 50g squash pulp obtained the highest ratings in terms of appearance, aroma, taste, texture, and overall acceptability. The balanced proportion of telescope snail meat and squash contributed positively to the sensory qualities preferred by the evaluators and consumers.

The study further revealed that there were no significant differences in appearance, aroma, and texture among the three treatments. However, significant differences were observed in taste and general acceptability, indicating that the ratio of telescope snail meat and squash significantly influenced flavor and consumer preference.

Shelf-life evaluation showed that the formulated product remained acceptable and safe for consumption for 30 days under chilling temperature conditions, while spoilage became noticeable on Day 35. This finding confirmed that proper chilling temperature helps maintain product quality and delay deterioration.

Microbial analysis confirmed that the best formulation was microbiologically safe for human consumption based on the absence of Salmonella and acceptable microbial counts following Philippine food safety standards. Proximate analysis also showed that the product possessed a low-fat and low-calorie nutritional profile while maintaining moderate protein content, making it a healthier alternative to conventional pork longganisa.

Overall, the study concluded that telescope snail and squash can be effectively utilized in the development of a nutritious, safe, acceptable, and sustainable skinless longganisa product that supports food innovation, healthier food alternatives, and value-added utilization of local resources.

V. RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are offered:
Food producers and entrepreneurs may adopt the balanced formulation of 50g telescope snail meat and 50g squash pulp (Treatment B) as the standard formulation for production because it obtained the highest sensory and acceptability ratings. Future product development may focus on improving and maintaining the flavor balance of telescope snail and squash to further enhance consumer preference and acceptability.

Consumers and retailers should observe the recommended 30-day storage period under chilling temperature conditions to ensure product quality and safety.

Small-scale food processors may adopt proper sanitation, handling, and storage practices to maintain microbial safety and product quality during production and distribution.

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Marketing and promotional activities may emphasize the product's low-fat and low-calorie nutritional profile to attract health-conscious consumers seeking healthier and sustainable food alternatives.

Future researchers may conduct further studies on the vitamin and mineral composition of the product, particularly the beta-carotene contribution of squash and the mineral content of telescope snail meat. Additional studies may also explore large-scale production, commercialization, cost analysis, packaging innovation, and consumer behavior related to the product.

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