Fish and Jackfruit Sausage with Malunggay Leaves

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Abstract

This study was conducted to develop a healthy sausage from Cardinal Fish (Mo-ong), Jackfruit, and Malunggay Leaves. Specifically, it sought to determine the sensory qualities of fish and jackfruit sausage with malunggay leaves in terms of appearance, aroma, taste, and texture among three treatments, find out the acceptability of the product, and determine if there is a significant difference in the acceptability. The study used the Completely Randomized Design (CRD) using three (3) treatments in three replications. The finished product was evaluated by the semi-trained panelists (Food Technology Professors) of CAPSU Main Campus. Results showed Treatment A had obtained the highest mean score, which had an adjectival description of "Extremely Appealing, Pleasant, Authentic, Delicious, and Fine" as evaluated by the panel of experts. The three treatments got a qualitative description of "Liked Extremely." However, Treatment A got the highest mean. Furthermore, there were no significant differences in the general acceptability of fish and jackfruit sausage with malunggay leaves among the three (3) treatments. Treatment A got the best proportion in making sausage, as the panel of experts suggested.

Keywords: *Fish, Jackfruit, Sausage, Malunggay Leaves, sensory qualities*

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Introduction

Once considered an art, sausage manufacturing is now based on a highly sophisticated science. New techniques regarding sausage manufacturing have emerged (Leroy, 2016). Innovations in product formulation, process engineering, and packaging methods have assisted in making sausage one of the major dynamic product areas in the meat industry. The segment of the meat industry that is growing the fastest is low-fat and no-fat meat products (Rivas, 2014).

According to Verbeke et. al. (2010), as cited by Saghir (2014), the increasing consumer demand for quality meat products results in the development of meat products by incorporating health-enhancing ingredients. The selection of meat for sausage production is important in achieving good-quality products. All the formulas of sausage production are based on meat, and also all additives used in sausage production must be based on weight rather than percentage (Saghir, 2014).

Regardless of their origin, fermented sausages can be defined as meat products that comprise a stuffed mixture of pork and/or beef, fat, salt, and nitrate and/or nitrite, including eventually sugar and different spices. Albeit less frequently, formulations can include poultry, lamb, goat, horse, camel, ostrich, and game meats (Prpich, 2021). A quick and easy meal is in demand. People of all races and ages need more time to prepare food due to their hectic schedules and daily activities. However, with the awareness of the effect of processed meat, many tend to shift from meat to fish. (American Journal of Dietetics, 2015). Eating fish two or three times a week helps reduce the risk of heart diseases as fish is a source of essential nutrients, including long-chain omega-3 fatty acids, iodine, and vitamin D (FAO, 2012).

The researcher believes adding vegetables such as jackfruit and malunggay leaves as principal ingredients would make the sausages richer in vitamins and minerals. These formed the basis for the conduct of this study.

The general objective of this study is to develop a healthy sausage from Cardinal Fish *(Moong)*, Jackfruit, and Malunggay Leaves. Specifically, it sought answers to these questions: to determine the sensory qualities of fish and jackfruit sausage with malunggay leaves in terms of appearance, aroma, taste, and texture among three treatments; to find out the acceptability of the product in terms of four sensory qualities among three treatments; to determine if there is a significant difference in the acceptability of the product among three treatments considering the four sensory qualities.

Materials and Methods

Completely Randomized Design (CRD) was the experimental design used in the study using the three (3) treatments, and subsequent replications were conducted to determine the cause of change.

The experiment was carried out in three (3) treatments, namely Treatment A (25grams of fish, 50 grams of Jackfruit Meat, and 2 grams of Fresh Malunggay Leaves), Treatment B (25grams of fish, 75 grams of Jackfruit Meat, and 2 grams Fresh Malunggay Leaves), and treatment (25grams of fish, 100 grams Jackfruit Meat and 2 grams Fresh Malunggay Leaves).

Product Formulation and Utilization

Procedure in the Preparation of Jackfruit (Langka). The tools and equipment were prepared. The young or immature jackfruit was selected. Then, washed, pared, sliced, and cooked in boiling water for ten minutes or until tender. Cool and grind using the electric meat grinder three (3) times to make it fine. Set aside for later use.

Procedure in the Preparation of Fresh Malunggay Leaves. The young malunggay leaves were selected. Sorted out the leaves, washed them thoroughly, and chopped them into small pieces. Set aside for later use

Procedure in the Preparation of Fish (Mo-ong). The fish was cleaned and washed thoroughly. Then, it was cooked in boiling water with hot pepper for 10 minutes to eliminate the smell. Drained the boiled fish and removed the bones. Set aside for later use.

Procedure in the Preparation of Fish and Jackfruit Sausage with Malunggay Leaves. The tools and equipment needed were prepared. All the ingredients were weighed using a dietetic scale. In a mixing bowl, all ingredients were mixed thoroughly. After mixing, the mixture was placed in a food processor and blended thoroughly for even distribution of ingredients. The mixture was weighed, wrapped in parchment paper, and rolled into a cylindrical shape. Then, it was rolled in aluminum foil. Steamed for 15 – 20 minutes at a moderate temperature. When cooked, it was unwrapped and rolled again tightly to make it firm in texture for easy sausage slicing. Then it was cooled, packed in a polyethylene bag, and stored in the freezer for shelf life. It can be sliced and pan-fried for a few minutes before serving.

Data Gathering Procedure

The study used a scorecard as a research instrument. It looked into the four (4) sensory qualities, such as appearance, aroma, taste, and texture, as the variables. In scoring the study variables, the Nine-Point Hedonic Scale, using a scorecard, was employed to evaluate the product.

Data Analysis

Statistical Package for Social Sciences (SPSS) was used to generate and process all the data needed in the study. Mean was used to determine the acceptability of the four sensory qualities tested on the products. The ANOVA was used to analyze the differences between the products in four sensory qualities among the three treatments.

The sensory qualities for evaluation were determined in terms of appearance, aroma, taste, and texture. The Nine-Point Hedonic Scale was used to determine the sensory qualities and acceptability of the product. Three trials were done to develop the most acceptable product regarding sensory qualities such as appearance, aroma, taste, and texture.

Results and Discussion

The results of the experiment brought about the following findings. The sensory qualities of fish and jackfruit sausage with malunggay leaves, considering the four sensory qualities of appearance, aroma, taste, and texture, in favor of treatment A had obtained the highest mean score, which had an adjectival description of "Extremely Appealing, Pleasant, Authentic, Delicious and Fine" as evaluated by the evaluators in three replications of the finished product.

Table 1. Sensory qualities of jackfruit sausage with malunggay leaves, considering the four qualities of appearance, aroma, taste, and texture.

Sensory Qualities	THREE (3) REPLICATIONS					
	TA		TB		TC	
	MEAN	AD	MEAN	AD	MEAN	AD
Appearance	8.60	EA	8.43	EA	8.13	EA
Aroma	8.66	EP	8.16	EP	8.26	EP
Taste	8.36	ED	8.33	ED	8.20	ED
Texture	8.53	EF	8.43	EF	8.06	VMF

Legend:

AD – Adjectival Description EA –Extremely Appealing
EP – Extremely Pleasant EF – Extremely Fine
ED – Extremely Delicious VMF – Very Much Fine

The general acceptability, Treatment A, B, and C got a qualitative description of "Liked Extremely"; however, Treatment A got the highest mean result as evaluated by the evaluators.

Table 2. Acceptability of jackfruit sausage with malunggay leaves, considering the four qualities of appearance, aroma, taste, and texture.

Sensory Qualities	THREE (3) REPLICATIONS					
	TA		TB		TC	
	MEAN	QD	MEAN	QD	MEAN	QD
Appearance	8.60	LE	8.43	LE	8.13	LE
Aroma	8.66	LE	8.16	LE	8.26	LE
Taste	8.36	LE	8.33	LE	8.20	LE
Texture	8.53	LE	8.43	LE	8.06	LVM
General Acceptability	8.54	LE	8.34	LE	8.16	LE

Legend:
QD - Qualitative Description LE - Liked Extremely
LVM - Liked Very Much

There were no significant differences in the general acceptability of fish and jackfruit sausage with malunggay leaves among the three (3) treatments. However, treatment A got the best proportion in making sausage as evaluated by the experts.The result shows there were no significant differences in the general acceptability of fish and jackfruit sausage with malunggay leaves among the three (3) treatments. However, treatment A got the best proportion in making sausage, as evaluated by the experts.

Conclusions

Based on the findings of the study, the following conclusions are drawn. Mo-ong Fish, Jackfruit, and Malunggay Leaves can be utilized in making a healthy sausage. Among the three treatments of fish and jackfruit sausage with malunggay leaves in three replications, treatment A, which is 25grams of fish, 50 grams of jackfruit, and 2 grams of fresh malunggay leaves, was generally liked extremely by the evaluators in terms of appearance, aroma, taste, and texture. There were no significant differences in the general acceptability of fish and jackfruit sausage with malunggay leaves among the three (3) treatments. However, treatment A got the best proportion in making sausage as evaluated by the experts.

Recommendations

The following are the recommendations based on the findings and conclusions of the study. Treatment A which is 25grams of fish, 50 grams of jackfruit, and 2 grams of fresh malunggay

is the best proportion suggested by the panel of experts in making sausage. It is further recommended to nutritionists/dietitians, parents, teachers, consumers, students, entrepreneurs, and food enthusiasts to consider fish and jackfruit sausage with malunggay leaves as a healthy and delicious substitute for meat sausage. It is also recommended that fish and jackfruit sausage with malunggay leaves be subjected to proximate analysis, sodium, computation, and evaluation of nutria-facts considering the potential for product commercialization and technology utilization. Finally, it is recommended that further studies and applications of fish, jackfruit, and malunggay leaves should be conducted in order to produce more varied food products aside from sausage for consumption and possible livelihood production.

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