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## **Production and Acceptability of Saba (*Musa Acuminata*) Peel in Making Marmalade**



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### INTRODUCTION

Consuming fruits and fruit-related products is known to improve immune health and general well-being. It reduces the risk of several chronic diseases, including age-related macular degeneration, cataracts, strokes, gastrointestinal disorders, certain types of cancer, hypertension, and heart disease. Experts recommend filling half of one's plate with fruits and vegetables to encourage healthy eating habits, as fruits contain significant amounts of dietary fiber, ascorbic acid, folic acid, vitamin A precursors, and minerals such as potassium, magnesium, iron, and calcium. Additionally, fruits provide numerous phytochemicals with potent antioxidant properties. For optimal health benefits, five servings of fruit should be consumed daily. Fruits are generally divided into temperate, sub-tropical, and tropical categories based on their origin and production temperature.

In many cultures, the fruit is considered the most important part of the plant due to its wide range of uses. However, the peel can also be innovatively repurposed rather than discarded. For example, banana peel, often discarded as waste, has potential as a productive and profitable innovation. Bananas are a common fruit in the Philippines, consumed both raw and cooked. Similarly, baked goods like muffins and bread are widely popular in the country. Thus, instead of being viewed as waste, banana peels can be used to create new, healthier products.

One innovative product that can be made from fruit peels is marmalade. Typically made from citrus fruits, marmalade has a jelly-like texture and consists of properly prepared juice and peel, with sugar. Marmalade is valued for its combination of jelly with fruit peel pieces, providing extra nutrition while reducing fruit waste (Inam et al., 2012). Rich in vitamin C, dietary fiber, calcium, and iron, marmalade may support cardiovascular health, help reduce cholesterol and relieve constipation. When properly stored, marmalade can last up to a year, and once opened, it can be refrigerated for up to three months.

This study generally aimed to produce a Saba (*Musa Acuminata*) banana peel marmalade and test its consumers' acceptability.

Specifically, the study sought to answer the following;

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1. To describe the formulation and production of Saba (*Musa Acuminata*) banana peel in making Marmalade.
  - 1.1. Treatment 1 (30% Banana Peel, 70% Lemon);
  - 1.2. Treatment 2 (50% Banana Peel, 50% Lemon); and
  - 1.3. Treatment 3 (70% Banana Peel, 30% Lemon).
2. To determine the acceptability of Saba (*Musa Acuminata*) banana peel marmalade in terms of its:
  - 2.1. Appearance;
  - 2.2. Color;
  - 2.3. Aroma;
  - 2.4. Texture;
  - 2.5. After Taste;
  - 2.6. Taste;
  - 2.7. General Acceptability; and
  - 2.8. Purchase Intent.
3. To determine the Physico-Chemical analysis of the most acceptable Saba (*Musa Acuminata*) banana peel marmalade in terms of its:
  - 3.1. pH;
  - 3.2. Water Activity;
  - 3.3. Viscosity; and
  - 3.4. % TSS.
4. To determine the initial product cost of the most acceptable Saba (*Musa Acuminata*) banana peel marmalade.
5. To draw implications of the study along Technology and Livelihood Education, Micro, Small and Medium Enterprises.

#### METHODOLOGY

The process utilized in developing and validating educational goods, according to Borg and Gall (1992), was Research and Production (R & D) Design, which was applied in this study. The term "product" in this study refers to the forthcoming Saba (*Musa Acuminata*) banana peel marmalade. Research and production (R & D) design refers to innovative efforts carried out by organizations or businesses to create new goods or enhance their current offerings. Maximizing human understanding was the goal to advance society. Various and distinctive activities were carried out by various corporations. Despite the distinctions, this approach attracted interest from other sectors because of its linearity and became the standard paradigm for innovation.

This study also implied trial and error method to produce the most acceptable Saba (*Musa Acuminata*) banana peel. By identifying and eliminating mistakes or failures through a variety of experimental procedures, trial, and error is the process of establishing the best way to achieve the intended result. This technique may be used in a variety of settings, including relationships, the workplace, and the home.

Finally, for the consumers' acceptability, the researcher applied descriptive method. To obtain and arrange the information needed to respond to the questions, this study used the descriptive technique of research. An existing program's quality is to be assessed by descriptive evaluative research, a subtype of descriptive research. By assessing judgment in terms of efficacy, attractiveness, or validity, it is intended to determine if a certain program has met its objectives (Cohen et al., 2007).

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## Data Analysis

To interpret the data researcher used the average or mean score to analyze the data received from the replies from the consumers and experts. A data set's average or mean is calculated by summing all the numbers in the set and then dividing by the number of values in the set (Ganti, 2021). The average can be calculated by dividing the total number of values by the sum of all the numbers. The mathematical average of a group of two or more data values is referred to as a means. Typically, the average is referred to as the mean or arithmetic mean. The word "mean" is only a way of defining the sample's average.

## Results and Discussion

The following are the study's key findings:

- 1. The process of producing Saba banana peel (*Musa acuminata*) marmalade involved key steps that ensured a high-quality product.** From collecting fresh banana peels to preparing various formulations, each phase aimed to optimize flavor and texture. Rigorous replication and sensory evaluations provided insights into consumer preferences, leading to the identification of the most acceptable formulation.
- 2. Treatment 1, which consisted of 30% banana peel and 70% Lemon marmalade, was the most acceptable formulation among consumers.** This treatment garnered high ratings in sensory evaluations, indicating a favorable balance of flavor and texture. The positive feedback highlights the potential for Saba banana peel marmalade to compete effectively in the market while promoting the innovative use of agricultural byproducts.
- 3. Physico-Chemical analysis of the most acceptable Saba banana peel (*Musa acuminata*) marmalade.** Treatment 1 (30% banana peel and 70% Lemon) highlights its strong commercial potential and consumer appeal. The findings underscore the product's quality and stability, making it a promising option for a market that effectively utilizes agricultural byproducts. This innovative approach not only addresses sustainability but also aligns with consumer preferences, positioning marmalade favorably within the food industry.
- 4. Saba banana peel (*Musa acuminata*) marmalade demonstrates the potential of utilizing agricultural byproducts for sustainable and commercially viable products.** The research identified a formulation appealing to consumer preferences and highlighted its relevance for Technology and Livelihood Education (TLE). These findings present significant opportunities for Small and Medium Enterprises (SMEs) to develop this unique marmalade, promoting sustainability and reducing food waste. Ultimately, the study emphasizes the dual benefits of environmental stewardship and economic opportunity, contributing to a more sustainable food industry.

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