



Optimizing the Recipe for Malabar Melastoma (*Melastoma Malabathricum* Linn.) Fruit Jam

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ABSTRACT

Malabar Melastoma (*Melastoma malabathricum* Linn.), also known as Tungaw - Tungaw, is an underutilized fruit with immense potential. Despite its exceptional qualities, Malabar Melastoma (*Melastoma malabathricum* Linn.) remains relatively unknown in the culinary world. This study determined the optimal ratio of ingredients for making Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam. It employed a descriptive design research method and gathered data from 15 respondents, selected through purposive sampling. The data were analyzed using frequency, percentage, and weighted mean. The findings indicate an optimal ratio of ingredients for making Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam, Recipe A with a ratio of 1 cup of refined sugar, 2 cups of distilled water, 1 teaspoon of citric acid, and 1 cup of pureed Malabar Melastome fruit. This study provided compelling evidence that there was an optimal ratio of ingredients for the best recipe for making Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam, which provides a good blend of flavors for the jam.

Keywords: Fruit Jam, Wild Fruit, Natural Resources, Best Recipe, Fruit Jam, Utilization

Rationale

Jam is a thick, sweet spread that combines chopped or crushed fruit with sugar, pectin, and water. It is also a combination of fruits and a sweetening agent that has been cooked to a suitable gelled consistency, either with or without the addition of other permitted ingredients (Biswas, 2022). While the jam is traditionally considered a self-preserving cooked fruit, the sugar mixture is used in jam production because it is high in natural sugar, acids, and pectin. The jam elements like color, texture, taste, and aroma are significant contributors to the overall quality and experience of the product. In addition, the flavor, texture, and color of fresh-cut fruits and vegetable products are also critical to consumer acceptance and success (Starowicz & Zieliński, 2019). Furthermore, the quality of homemade jam is highly valued, emphasizing the significance of the sensory elements in jam production (Connelly, 2013)

Unutilized natural resources are needed to address the high demand for natural and healthy food products (Buzby & Hyman, 2014). An inadequate supply of local produce can affect the community's access to fresh and nutritious food (Brink, et al., 2023). This can lead to food insecurity, affecting physical health like malnutrition, deficiencies, and the overall well-being of an individual. Additionally, it is tied to cultural heritage and traditions; insufficient supply may erode its cultural and community identity.

Insufficient supply of local food produce is caused by inadequate knowledge of the proper utilization. It revealed that the Philippines held the highest rate of food insecurity in Southeast Asia from 2017 to 2019, facing a shortage of reliable access to food (FAO, 2020). This dilemma should be addressed immediately by finding unutilized natural resources like the Malabar Melastome to contribute to the effort of the food industry to find and innovate tasty, nutritious, and locally available products (Belščak-Cvitanović et al., 2015). Furthermore, it sought to contribute to the food industry's advancement, promote sustainable agriculture, and enhance food security by introducing a novel product that was nutritious, flavorful, and attractive to consumers. The researcher embarked on this study to demonstrate its value to the broader community and open new doors for underutilized fruits.

Research Objective

The study delved into the optimal ratio of ingredients for making Malabar Melastoma (*Melastoma malabathricum* Linn.) fruit jam. Specifically, it aimed to identify the best recipe. (correlate to palatability)

Introduction

The global demand for innovative products has emphasized the need for a sustainable, healthy, and consistent food supply chain that benefits various economies and the environment. In response to this growing demand, the food industry is exploring and developing new products using a variety of natural raw materials. The industry will continue to seek out fresh raw materials, such as underutilized local and regional natural resources.

The ASEAN countries are well-known for their abundant and diverse natural resources, including agricultural and aquatic resources. As one of the ASEAN countries, the Philippines is home not only to extensive resources but also to underutilized natural resources that can be used to make food products. By utilizing these resources, we can reduce food waste and environmental problems while generating new job opportunities. The food industry can produce unique food items using this strategy, helping preserve local economies and reflect regional cultural heritage.

The utilization of natural resources such as the Malabar Melastome (*Melastoma malabathricum* Linn.) also honors regional cultural heritage. This approach has led to new discoveries and employment opportunities while reducing food waste and increasing food security, both of which are essential for ensuring a stable and sustainable food supply chain (Chien et al., 2023). The need to utilize regional and local resources also creates a more diverse and sustainable supply chain that benefits all parties, which aligns with the principles of Article 11 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR). This promotes an adequate standard of living, including the right to food, clothing, and housing, and improves methods of production, conservation, and distribution of food by disseminating knowledge of nutrition principles.

Various fruits can be used to make fruit jams readily available in the community (Naeem et al., 2015). Hence it was not properly utilized. Introducing a novel food item that was wholesome, delectable, and appealing to consumers aids the growth of the food industry. As mentioned by OA et al. (2022), fruit jams can potentially lower the risk of chronic diseases and provide essential vitamins and minerals. Additionally, fruit jams can serve as an alternative source of income for farmers and can be used in various baked goods such as cakes and other culinary creations (Garg et al., 2018).

Research Design

This study used a descriptive method to describe how the Melastome (*Melastoma malabathricum* Linn.) as a fruit jam was planned and worked out based on the perception of the respondents. This was to determine the optimal ratio of ingredients for the best recipe for the fruit jam.

Research Locale and Participants

The study was conducted in a State College in the Bicol region. The institution was purposely chosen since it offers a technology and livelihood education program. The participants of this study were 15 sophomore students from the Bachelor of Technology and Livelihood Education (BTLED) selected through purposive sampling.

Data Gathering Procedure

The study utilized an evaluation checklist. This was prepared and distributed among the students. The checklist comprised various sections, such as the respondent's profile, three (3) fruit jam recipes, and the optimal ratio for the best recipe according to taste, texture, color, and aroma. The respondents were required to evaluate the different recipes based on these attributes. The checklists were retrieved and subjected to statistical treatment (frequency count, percentage technique, and weighted mean) and interpretation.

Research Instrument

The evaluation checklist contains the permission to conduct the study, the respondent's profile, and two tables for the three recipes and their attributes containing taste, texture, color, and aroma.

The first table consists of four columns. The first column lists the ingredients: refined sugar, distilled water, citric acid, and Malabar Melastome pureed fruit. The second column contains the ratio of ingredients for Recipe A (1 cup (refined sugar), 2 cups (distilled water), 1 teaspoon (citric acid), 1 cup (pureed fruit)). Next is a third column, which contains Recipe A (1 cup (refined sugar), 2 cups (distilled water), 1 teaspoon (citric acid), and 1 ½ cup (pureed fruit)). Lastly, Recipe A (1 cup (refined sugar), 2 cups (distilled water), 1 teaspoon (citric acid), 2 cups (pureed fruit)).

Data Analysis

The evaluation of the fifteen (15) student participants were analyzed and interpreted using a 4-scale rating scale, namely: very good, good, fair, and poor.

Methodological Delimitations

Fifteen sophomore students were the participants in this study. These participants were responsible for rating Malabar Melastoma fruit jam's optimal ratio of ingredients for the best recipe. The rating is based on their sensory evaluation. This study did not include other parts of the plant and did not cover other factors that may affect their evaluation of the product, such as packaging and labeling.

RESULTS AND DISCUSSION

Optimal Ratio of Ingredients for Malabar Melastome

(*Melastoma malabathricum* Linn.) Fruit Jam

Table 1 presents the summary of the evaluation of the three recipes for making Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam for the best recipe. It shows the attributes considered for the three recipes, such as taste, texture, color, and aroma. Each recipe was given an average weighted mean based on these attributes and then ranked accordingly.

Recipe A has the highest weighted mean for taste (3.53), followed by Recipe B (1.68) and Recipe C (1.45). In terms of texture, Recipe A and Recipe B have weighted means for texture 3.52 and 3.47, respectively, while Recipe C has a lower weighted mean (3.13). Similarly, Recipe A has the highest weighted mean for color (3.72), followed by Recipe B (2.53) and Recipe C (2.30). Lastly, the aroma of Recipe A has the highest weighted mean for aroma (3.73), followed by Recipe B (2.23) and Recipe C (2.12).

Table 1

Summary Evaluation of the Optimal Ratio of Ingredients

RECIPES	ATTRIBUTES (WEIGHTED MEAN)				AVERAGE WEIGHTED MEAN	Int	RANK
	TASTE	TEXTURE	COLOR	AROMA			
A	3.53	3.52	3.72	3.73	3.63	VG	1
B	1.68	3.47	2.53	2.23	2.48	F	2
C	1.45	3.13	2.30	2.12	2.25	F	3

Legend:

Rating Scale	Mean Range	Interpretation
4	(3.26-4.00)	Very Good (VG)
3	(2.51-3.25)	Good (G)
2	(1.76-2.50)	Fair (F)
1	(1.00-1.75)	Poor (P)

Comparing the average weighted mean of all attributes of the three recipes, Recipe A has the highest very good rating of 3.63, followed by both Recipe B and Recipe C with fair ratings of 2.48 and 2.25. Based on the given results, it can be concluded that Recipe A was the most suitable recipe for preparing Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam. Recipe B, although not as good as Recipe A, was the second-best option. On the other hand, Recipe C was the least preferred recipe among the three options, considering all the attributes.

The study by Naeem et al. (2015) emphasized that a variety of fruits can be reutilized in the production of fruit jam, which is preserved through canning or sealing to extend its shelf life. This supports the research study on the acceptability of Malabar Melastoma in creating a new kind of jam, indicating the wide favorability of such products. This supports the exploration of Malabar Melastoma as a potential fruit jam ingredient, aligning with the established acceptance of diverse fruit-based jams. Additionally, as highlighted in the study, the sensory characteristics and potential health benefits of Malabar Melastoma further contribute to its potential as a valuable addition to the range of fruits used in jam production. This aspect of the recipe was an important motivation behind developing innovative products with distinctive properties that generate revenue (Śledzik, 2013).

Findings

Based on the ratings given by participants, Recipe A received the highest very good rating of 3.63, followed by both Recipe B and Recipe C with fair ratings of 2.48 and 2.25 respectively, when used to prepare Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam. It only implies that Recipe A was the most suitable recipe, while Recipe B was the second-best option. In contrast, Recipe C was the least preferred recipe, considering all the attributes. The participants found Recipe A to be a good balance of flavor in terms of taste, texture, color, and aroma.

Conclusion

The best recipe of ingredients for Malabar Melastome (*Melastoma malabathricum* Linn.) fruit jam depends on the correct ratio of ingredients and what are the target consumers for the product. This means careful planning and preparation in making a jam is crucial to attain a quality jam. Thus, the knowledge, experience, and skills of the maker are essential factors to attain such quality.

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