

GUAVA (*Psidium guajava* L.) LEAVES AS TEA INFUSION

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Abstract

This experimental study determined the level of acceptability of "GUAVA (*Psidium guajava* L.) LEAVES AS TEA INFUSION". The evaluators were purposively selected Coffee shop owners and HE Teachers of Igbaras National High School. The mean and the standard deviation were used to determine the different formulation of the study. T-test were used to test the general acceptability of the product. The result revealed that there was a significant difference in the "Guava (*Psidium guajava* L.) LEAVES AS TEA INFUSION" as to its appearance, aroma, taste and general acceptability in three formulations. This was due to the additional amount of guava leaves. However, there was no significant difference in the general acceptability of Guava leaves as tea infusion in two formulations. The sensory evaluation showed that as to appearance, the product perceived as to "Very Light Brown" in all Formulations A and B; as to aroma, the product was perceived as perceived as "Guava Leaves Aroma" for Formulation A while Formulation B was perceived as "Moderately Aroma". As to taste, for Formulation A, it was perceived as "Slightly Guava Taste" and for Formulation B as "Moderately Guava Tea Taste"; as to General Acceptability, for Formulation A, the product was perceived as "Either Liked Slightly" and in Formulation B as "Liked Moderately" by the evaluators.

Keywords: Guava, Leaves tea infusion, Level of acceptability

INTRODUCTION

A tea that is not a tea is otherwise known as infusion. Infusions are used in many beverages to add flavor to the drink. It is a drink made by placing a flavoring ingredient such as tea or herbs into a liquid like hot water. Infusions are the most popular method of preparing teas and tisanes (Goodwin, 2022). In fact, making a brewed tea is making an infusion. This tea or "herbal tea" preparation is also called brewing and typically involves pouring hot water over plant matter such as dried leaves or berries, waiting for a period of time which is called steeping and then removing the plant matter before drinking. It sounds a lot like making a cup of tea, but an infusion does not come from the traditional tea plant. Quite simply, it has not got any tea leaves in it. The word infusion may also refer to the infused beverage itself. It is sometimes used to refer specifically to tisanes, which may be called "herbal infusions," but it can also refer to true teas. Tea infusions are about fruit or herbal teas. Herbs and spices have been used for centuries for their health and wellbeing properties. Herbal infusions are all made from natural, organic herbs. This works particularly well with the fruit infusions which make a great substitute for other drinks. With a flavor to suit every palette, they are a delicious plant-powered way to boost a better lifestyle and with the abundant presence of guava leaves in the surrounding, one could make a healthy infused tea.

This study aimed to determine the perception of evaluators regarding guava tea infusion and its overall acceptability. Specifically, the study sought to:

1. Determine the level of acceptability of tea infusion made from old guava leaves in terms of aroma, appearance, and taste, both overall and when categorized by the type of evaluators.

2. Assess the level of acceptability of tea infusion made from young guava leaves in terms of aroma, appearance, and taste, both overall and when categorized by the type of evaluators.
3. Identify whether there is a significant difference in the level of acceptability of tea infusion made from old guava leaves in terms of aroma, appearance, and taste when categorized by the type of evaluators.
4. Examine whether there is a significant difference in the level of acceptability of tea infusion made from young guava leaves in terms of aroma, appearance, and taste when categorized by the type of evaluators.

The results of this study may provide valuable insights and benefits to various groups. For students, it can increase their awareness of the benefits of guava tea infusion, encouraging them to make healthier drink choices and become more cautious when preparing beverages. For teachers, the study may highlight the availability of healthier, cheaper, organic, and year-round ingredients, such as guava leaves, that can be used or infused in making tea. Housewives may find the study inspiring, encouraging them to be more resourceful and creative in preparing healthier drinks for their families or even offering such infused beverages to guests at home.

Local tea shop owners can use the findings to promote guava tea infusion to their customers, raising awareness about its advantages and expanding its popularity. For local farmers, the study may encourage them to plant more guava trees in their farms or nearby spaces, as the leaves have potential future uses. Additionally, guava trees can provide shade and fruits, serving multiple purposes. Finally, future researchers may find this study helpful as a basis or reference for conducting related studies that benefit the community and contribute to the growing body of knowledge on guava tea infusion and its potential uses.

LITERATURE REVIEW

Guava (*Psidium guajava* L.) Leaves

The leaves of *Psidium guajava* are rich in tannin, and have antiseptic properties. The microbicidal activity of *Psidium guajava* was attributable to guajaverine and to psydiolic acid. The active flavonoid compound guajaverin extracted from leaves of same plant was reported to have high potential antiplaque activity (Brotz-Oesterhelt, 2011).

The effect of *Psidium guajava* leaves and fruit as anti-diabetic agents has been studied by several authors. The evaluation of some medicinal plants of India for antidiabetic potential has an effect. They assessed some medicinal plants and *Psidium guajava* is one among those which has antidiabetic activity. They administered the aqueous extract of leaves of 1gm/Kg for 30 days. It showed a significant reduction in blood glucose, urea, body weight, liver glycogen and serum cholesterol. These were estimated in alloxan induced experimental rats and they were contrasted with control and also with insulin management (Grover, 2010).

The effect of an aqueous leaf extract of *Psidium guajava* on myocardial injury in the model of global ischemia followed by reperfusion. High-energy phosphates and malondialdehyde (MDA) in the perfused hearts were significantly reduced with the plant extract. In another study, aqueous leaf extract of *Psidium guajava* exhibited cardioprotective effects against myocardial ischemia-reperfusion injury in isolated rat hearts. Augmentation of endogenous antioxidants, maintenance of the myocardial antioxidant status and significant restoration of most of the altered hemodynamic parameters may have contributed to its cardio protective effect (Yamashiro, 2010 child diarrhea by those who cannot afford or do not have access to antibiotics. This study screened the antimicrobial

effect of essential oils and methanol, hexane, ethyl acetate extracts from guava leaves. The extracts from Guava leaves were tested against diarrhea causing bacteria (Sanches, 2011).

Conceptual Framework of the Study

The researchers determined the potential of utilizing Guava leaves as tea infusion and to determine perceptions of the evaluators of the product. In this study, process variables are present and these are to determine the level of acceptability of guava leaves tea infusion and to determine its significant difference. Such concept is shown below:

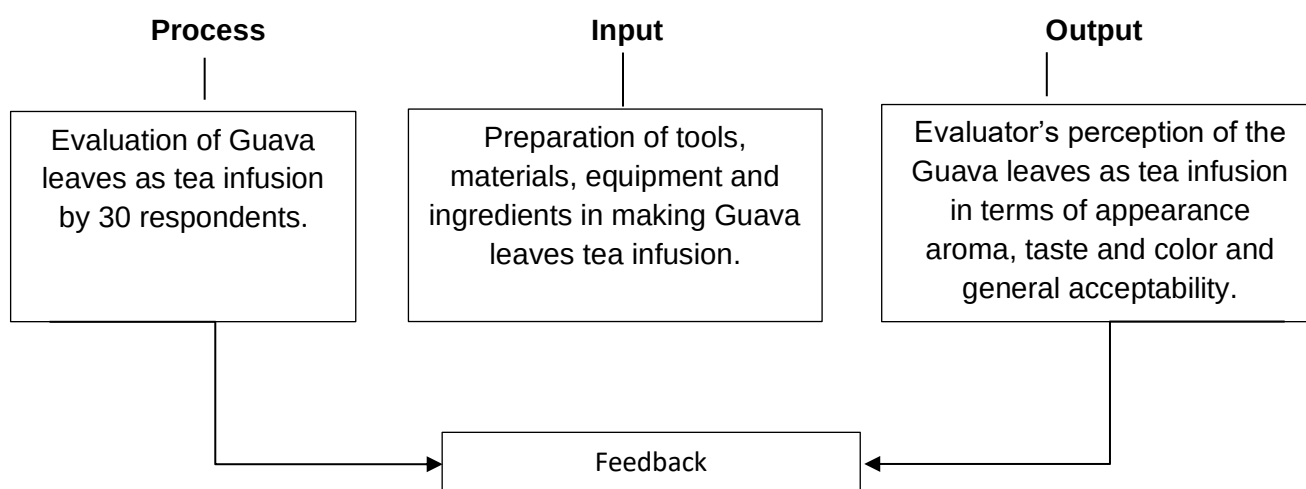


Figure 1. Concept

RESEARCH METHOD

This study was conducted using the experimental research design. This design is defined as the experimental designs described in this chapter all have their associated strengths, limitations, and varying levels of rigor. Some designs control for most internal threats to validity, whereas others control for far fewer. The important thing is to know the strengths and limitations of each research design, and how these may affect the internal validity and, in turn, the study results and interpretation of those results. (Salazar, L. F., Crosby, R. A., & DiClemente, R. J., 2015). This research aimed to study about the guava lemon tea infusion as to its characteristics and its general acceptability. In this study, the evaluators were the teachers, and coffee shop owners.

Table 1. Distribution of evaluators

Evaluators	N	%
<i>Entire Group</i>	30	100%
Teachers	15	50%
Coffee shop owners/ business operators	15	50%

Table 1 shows the percentage of distribution of the evaluators. The evaluators were the teachers fifteen (15) had the percentage 50% of and the coffee shop owners/ business men/ operators fifteen (15) percentage of 50% of the respondents. The total respondents were thirty. Materials and Instrumentations: 3 gms. Old Guava Bald Leaves and 2.5 gms. Guava Bald Leaves. The tools and equipment to be used are the measuring spoon, Almires, scissors, strainer, dehydrator, heater and casserole. Working table, weighing scale and gas range were also used.

The experimental procedure was divided into two phases:

Phase I- Processing of Young Guava Leaves

The following were steps in processing young guava leaves

1. Harvest fresh guava leaves.
2. Wash it well and put in a clean basin.
3. Wipe with a clean dry cloth until it gets dry.
4. Put in the dehydrator. Leave it 3 to 5 hours.

Formulation A

INGREDIENTS	DESCRIPTION	QUALITY	UNIT
Old Guava Leaves	(puree)	5	grms
Purified water		1	cup

Formulation B

INGRIDIENTS	DESCRIPTION	QUALITY	UNIT
Young guava leaves	(puree)	3	grms
Purified water		½	cup

Synthesis

It is in this light that this study on Guava Leaves as Tea Infusion identifies the evaluator's perception in terms of appearance, aroma, taste, as well as establishing its general acceptability. This study also aimed in discovering new product using Guava Leaves. More so, this study aims a wider and deeper study on the various benefits given by the Guava Leaves as a main ingredient.

Phase II – Cooking Procedure

The prepared, all ingredients and the kitchen tools and utensils will be set on the table to be ready for use. The amount of ingredient will be measured accurately. The following will be the steps in making Guava bald leaves as tea.

1. Add also 2.5 grams of dried Guava bald leaves.
2. Use food processor in powderized Guava bald leaves.
3. Place it in a clean dry stainless tray.
4. Start to pack it in a tea bag.
5. Store it in a clean and dry tea caddy.

Scoring Scale

Appearance

- 4.21 - 5.00 - Extremely Dark Brown
- 3.41 - 4.20 - Very Dark Brown
- 2.61 - 3.40 - Moderately Dark Brown
- 1.81 - 2.60 - Light Brown
- 1.00 - 1.80 - Very Light Brown

Aroma

- 4.21 - 5.00 - Strong Guava leaves as Tea Aroma
- 3.41 - 4.20 - Moderately Guava leaves as Tea Aroma
- 2.61 - 3.40 - Guava leaves as Tea Aroma
- 1.81 - 2.60 - Slightly Guava leaves as Tea Aroma
- 1.00 - 1.80 - No Guava leaves as Tea Aroma

General Acceptability

- 1.00 - 1.89 - Liked Extremely
- 1.90 - 2.78 - Liked Very Much
- 2.79 - 3.67 - Liked Moderately
- 3.65 - 4.56 - Liked Slightly
- 4.57 - 5.45 - Either Liked Slightly
- 5.46 - 6.34 - Disliked Slightly
- 6.35 - 7.23 - Disliked Moderately
- 7.24 - 8.12 - Disliked Very Much
- 8.13 - 9.00 - Disliked Extremely

Scoring of Variables

In scoring the variables of the study, the Nine (9) Point Hedonic Rating Scale score card was used by the researcher in determining the sensory qualities and acceptability of the Guava leaves as tea infusion. This method of scoring the variables required the respondents to rate the product based on their own judgement. This research was scored, weighted arithmetically (Layno,2017) and categorized as follows.

Data Analysis Procedures

The data was tabulated as statistically analyzed using arithmetic mean to determine the temperature, texture, and duration of the drying of the guava leaves as tea infusion considering the process (Dehydration) and to find out the acceptability of the processes of the guava leaves as tea infusion in terms of sensory qualities as evaluated in terms of Aroma, Appearance, Taste, General Acceptability.

RESULTS AND DISCUSSION

This chapter presents the descriptive and inferential data gathered from the respondents of the study and their respective analysis and interpretation.

Descriptive Data Analysis

Table 1. Guava Leaves as Tea Infusion as a whole and when grouped according to type of evaluators

Formulation A

Variable	M (SD)	Description
Appearance		
Teachers	1.53 (1.06)	Light Brown
Coffee Shop Owners	1.20 (0.56)	Very Light brown
As a whole	1.37 (0.85)	Very Light Brown
Aroma		
Teachers	3.13 (0.99)	Guava as Tea Aroma
Coffee Shop Owners	2.60 (0.91)	Slightly Guava Lemon as Tea Aroma
As a whole	2.87 (0.97)	Guava Leaves as Tea aroma
Taste		
Teachers	1.93 (0.80)	
Coffee Shop Owners	2.00 (0.76)	
As a whole	1.97 (0.77)	Slightly Guava as Tea Taste
General Acceptability		
Teachers	5.00 (1.51)	Slightly Guava as Tea Taste
Coffee Shop Owners	5.67 (0.72)	Slightly Guava as Tea Taste
As a whole	5.33 (1.21)	Slightly Guava as Tea Taste

Data revealed as to General Acceptability Formulation A was Either liked slightly (M=5.33; SD=1.21) and Formulation B was Liked Moderately (M=7.03; SD=0.85) since the standard recipe was used and different measurements of guava leaves in every formulation.

Variable	M (SD)	Description
Appearance		
Teachers	2.33 (0.49)	Light Brown
Coffee Shop Owners	2.27 (0.46)	Very Light Brown
As a whole	2.30 (0.47)	Light Brown
Aroma		
Teachers	3.47 (0.99)	Moderately Guava Leaves as Tea Aroma
Coffee Shop Owners	3.53 (0.92)	Moderately Guava Leaves as Tea Aroma
As a whole	3.50 (0.94)	Moderately Guava Leaves as Tea Aroma
Taste		
Teachers	3.53 (0.92)	Moderately Guava Leaves as Tea Taste
Coffee Shop Owners	3.53 (0.74)	Moderately Guava Leaves as Tea Taste
As a whole	3.53 (0.82)	Moderately Guava Leaves as Tea Taste
General Acceptability		
Teachers	6.76 (0.70)	Liked Moderately
Coffee Shop Owners	7.33 (0.90)	Liked Very Much
As a whole	7.03 (0.85)	Liked Moderately

Data revealed that as to Appearance, Formulation A was Very Light Brown (M= 1.37; SD=0.85) and Formulation B (M= 2.30; SD=0.47) since guava leaves is color green, it contributed to the color of the two formulations. The equal amount of measurement of guava leaves, the lighter its color. As to aroma, Formulation A was described Guava Leaves as Tea Aroma (M=2.87; SD=0.97 and Formulation B was described as Guava Leaves as Tea Aroma (M=3.50; SD=0.94) since the equal amount of guava leaves used.

In terms taste, Formulation A Slightly Guava Leaves as Tea Taste (M=1.97; SD=0.77) Formulation B Guava Leaves as Tea Taste (M=3.53; SD=0.82) since equal amount of Guava leaves used in Formulation A result to slightly guava tea taste due to the amount of Guava bald leaves.

Result revealed that the additional amount of guava bald leaves in making tea in Formulation A did not alter the characteristics if the tea making it Either Liked Slightly by the evaluators. Since Guava Bald Leaves is well-known to its herbal medicine, then it is highly suggested to use Guava Leaves as tea.

Inferential Analysis

Table 2. Difference in the perception of the Guava Leaves as Tea Infusion in terms of appearance, aroma, taste and General Acceptability.

Variable	Mean	df	t	p
Appearance Teachers	1.93	28	1.00	0.325
Coffee Shop Owners	1.73			
Aroma Teachers	3.30	28	0.82	0.417
Coffee Shop Owners	3.07			
Taste Teachers	2.73	28	-0.14	0.894
Coffee Shop Owners	2.77			
General Acceptability Teachers	5.87	28	-1.99	0.056
Coffee Shop Owners	6.50			

* significant at $p < 0.05$

Table 2 present the result of the evaluators' perception of Guava Leaves as Tea Infusion in two Formulations in terms of appearance, aroma, taste and General Acceptability. Data revealed that as to appearance, there is no significant difference ($t=1.00$; $p=0.325$) since guava is green and it contributed to the appearance of Formulation A. Further, it was revealed that the higher amount of measurement of guava leaves the lighter its appearance.

In terms of taste, there was a significant difference between the two formulations ($t=-0.14$; $p=0.894$) since they have different amount of guava bald leaves it affects the taste of the Formulation A.

Therefore, the null hypothesis which states that there is no significant difference in the perception of evaluators on the guava bald leaves in two formulations was accepted in terms of appearance, aroma, and taste. In contrast, the null hypothesis which states that there is no significant difference in the perception of the evaluators in guava bald leaves in two formulations in terms of its taste was accepted.

The general acceptability of two formulation of guava leaves as tea infusion, data revealed that no significant difference existed between the two formulations ($t=-1.99$; $p=0.056$). Hence, the null hypothesis which states that there is no significant difference in the sensory evaluation of the evaluators in the two formulations of guava leaves as tea as to General Acceptability is accepted.

Furthermore, the result indicated that increasing the amount of guava leaves as tea contributed to the difference of the product appearances, aroma, and taste as perceived by the evaluators. Therefore, as what the result revealed based on the general acceptability of the two formulations, there is no significant difference in the mean, although both are Liked Moderately, with Guava bald leaves, falls at the higher end of the range for General Acceptability.

CONCLUSION

Based on the result of the study, the following conclusions were made: There is a significance difference the perception of the evaluators as to appearance, aroma, and taste of the Guava Leaves as Tea Infusion in two formulations the evaluators Liked Moderately the Guava Leaves as Tea Infusion in two formulations. The null hypothesis which stated at there is no significance difference in the perception of the Guava Leaves as Tea Infusion as to taste and acceptability was accepted. Guava Leaves can be potential main ingredient in making tea where can save money and as well as medicinal used.

Based on the findings and conclusion of the study, the researchers recommend that since the Guava Tea Infusion in two formulations was moderately liked by the evaluators, mass production of the product may be considered for sale in coffee shops and other stores. Faculty members may share the findings and incorporate new ideas into their culinary teaching. Students are encouraged to continue innovating the product and provide more information about the health benefits of guava leaves to HE students. Farmers may be motivated to continue planting guava trees, which could help generate income by selling them in local markets. Vendors may also consider producing and selling the product in markets, coffee shops, and other stores. Lastly, future researchers are encouraged to pursue related studies in the food industry, using this research as a guideline.

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