

Marketability and Health Benefits Obtained from Dried Okra, Turmeric, Lemon grass (tanglad), Guyabano Leaves and Mint Leaves as an Ingredient in Making Tea

Gina D. Tabia, Apple Joy M. Garcia

Faculty of Food and Service Management Department

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*Corresponding author: mrs.tabia@gmail.com/
tabiagina3@gmail.com

ABSTRACT

*This study aimed to evaluate the benefits and marketability of dried okra, lemon grass (tanglad), turmeric, guyabano leaves and mint leaves as ingredients in making tea. The product was evaluated based on four criteria: appearance, aroma, taste and marketability. This study used the experimental and descriptive methods of research. The respondents were 340 second year Bachelor in Industrial Technology (BIT), Bachelor of Technical Teacher Education (BTTE) , Certificate of Technology (COT) students and 10 instructors in Marikina. Survey questionnaire and a 5-point Likert Scale were used as data gathering instruments. Sloven's formula was used to get the representative sample or population of the student respondents. The data gathered was statistically treated using weighted mean and t-test. Results showed that the students and teacher respondents **strongly agree** to the benefits and marketability of dried okra, lemon grass(tanglad), turmeric, guyabano leaves and mint leaves as ingredient in making tea with regards to appearance, aroma, taste and marketability as evidenced by the overall grand means. Results also revealed that there is no significant difference in the evaluation as regards to appearance, aroma, taste and marketability of the produced tea. Further improvement as regard its packaging material and labeling as recommended. The percentage of the tea's constituents and properties must be determined in order to guide the consumers.*

Introduction

Background of the Study

Many people would agree that tea is one of the indispensable beverages consumed at any time of the day. According to Castillo (2011), people aimed to have a healthy living and this aim could commence through healthy foods and beverages. People now have a healthy option through organic substances present in foods. Its health benefits are among the major concern by the consumers. Tea is an organic beverage which consists of some dry herbs. It provides the following health benefits such as having antioxidant which may help prevent complications from diabetes and lessens the possibility of the growth of cancer cells, fights common cold, encourages weight loss, lowers cholesterol and could boost mental alertness. Galey (2016), claimed that herbal teas, commonly called as herb teas and fruit teas are beverages made from infusion of herbs, spices, fruits or other plant materials. Herbal teas can be made of fresh or dried flowers, leaves, seeds and roots. Hamilton (2016) attested that drinking teas aid in proper digestion and relaxation of the body.

Further research findings claim that globally, more people suffer from different diseases like hypertension, diabetes and heart ailment. Studies also found that some teas may help fight cancer, heart disease, diabetes and hypertension. It also aids in weight loss, lowers cholesterol and bring about mental alertness (Types of Teas and Their Health Benefits March 2009). Tea helps prevent complications from diabetes, like loss of visions and kidney damage.

Tea may be processed locally for it to be cost effective so that majority could afford it and to promote our local products and help our local farmers as well. To create a different kind of nutritional tea, the researchers investigated a tea blended from guyabano leaves, mint leaves, lemon grass,

turmeric and dried okra to ensure better health benefits which can be derived from the beverage.

Okra, known as lady fingers or gumbo is used in culinary as soup or stew. According to Chaim (2016), its sticky and slimy texture makes it unpalatable and unappealing to children as well as teenagers. As Mercola (2016) cited that okra provides a unique set of plant-based nutrients with all the vitamins, minerals and disease-fighting compounds. Furthermore, Mercola (2016), claimed that okra is full of vitamins and minerals which energizes the body and brain has antioxidants and is high in fiber.

Turmeric or luyang dilaw is a kind of spice used in culinary. It is a medicinal plant which helps prevent nausea and headache. Gunnars (2018) cited that turmeric can reduce depression than the usual anti-depressant drugs. Furthermore, Curcumin is the main active ingredient in turmeric and scientists have discovered as an effective agent for killing cancer cells. Its effectiveness has been extremely limited because it is not naturally soluble in water. (University of Illinois College of Engineering. "Solving its insolubility, researchers discover method to deliver curcumin to cancer cells." ScienceDaily. ScienceDaily, 6 August 2018.)

Guyabano leaves are known as soursop leaves that can be used as meat tenderizer. In fact Barrett (2013), a blogger, claimed that the leaves of guyabano can relieve stomach distress. Research revolving guyabano's healing properties for cancer revealed that the leaves and stems were found effective in attacking and destroying malignant cells.

Mint leaves have a sweet flavor with a cool after taste and aromatic leaves could also be used as an herbal medicine. As Mercola (2016) stated, this herb has one of the highest antioxidant which can help cure a variety of ailments. Additionally, McKinsey (2014) revealed that mints were being used

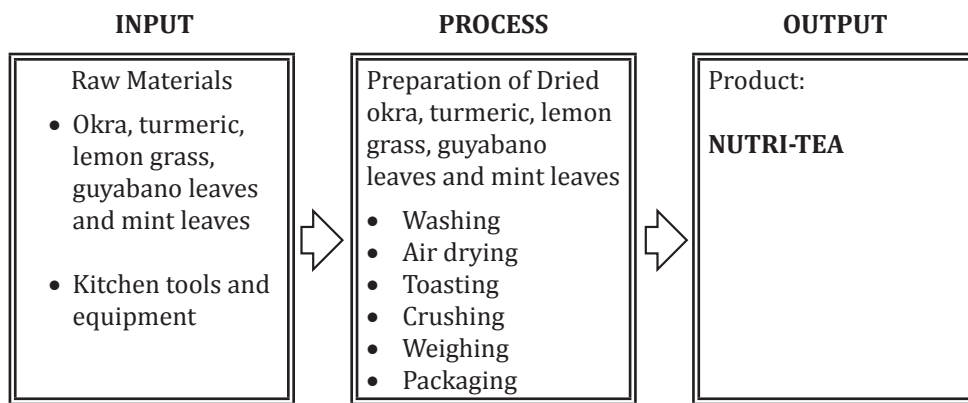


Figure 1. Preparation of Dried Okra, Turmeric, Lemon grass, Guyabano Leaves and Mint Leaves as Ingredients in Making Tea.

for centuries such as to make teas which relieves nausea and eases cramps and pain.

Likewise, lemon grass also known as tanglad is a perennial tufted grass with a long, sharp-edged blades and has an aromatic, citrus odor. Its leaves can cure cough and colds. According to Olorunnisola (2014, International Food Research Journal . 2014, Vol. 21 Issue 2), both guyabano and lemon grass are anti-inflammatory herbs. A chemical compound which is citral, found in lemon grass inhibits the formation of acid which causes inflammation.

By using these available ingredients in making tea, the researchers' attempted to produce tea which is affordable, nutritious, and marketable and can compete with the existing brands in the market. This developed tea may help the Filipinos to patronize the locally made nutritional tea.

With this study, the future researchers and students may have knowledge on the important benefits which can be derived from these ingredients and with the modern technology and medical advances; there are still healthy options and cheap sources of herbal tea.

This may also help the Food and Service Management Instructors and Professors

in product innovation and development to come up with a research-based product center which will produce all the research products for the school community and could be a part of the income generating project. The ingredients could be a part of other nutritious and healthy beverages that could be further promoted.

Purpose of Research

This study aimed to evaluate the benefits and marketability of dried okra, turmeric, lemon grass (tanglad), guyabano leaves and mint leaves as ingredients in making tea. It specifically sought answer the following questions: (1). What are the chemical properties or constituents that can be found in the produced tea based on the laboratory test? (2). How do the respondents evaluate the produced tea in terms of appearance, aroma, taste and marketability? (3). Is there a difference on the benefits and marketability of the produced tea based on the above mentioned criteria?

Method

The methodological framework used in the study is presented Input-Process-Output Model. In this model, the process

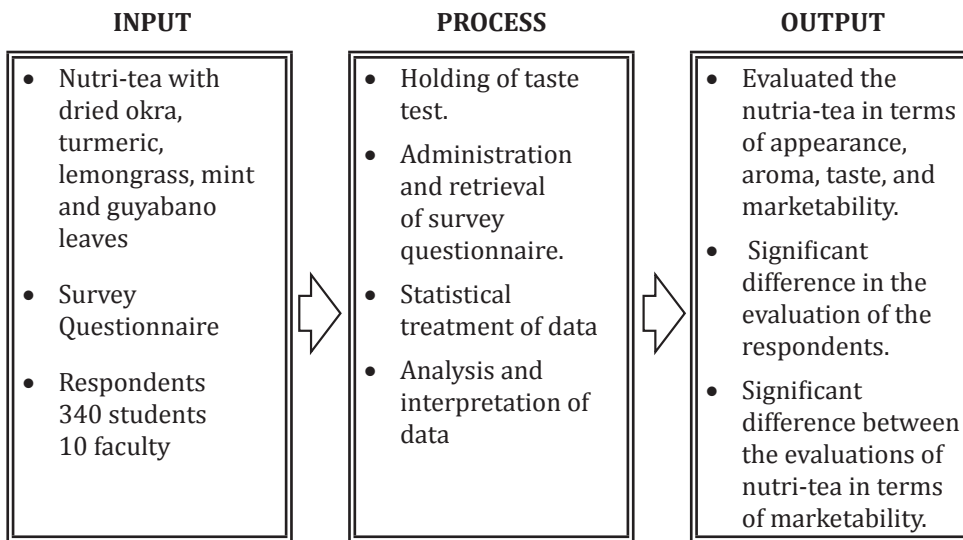


Figure 2. Methodological Model of the Evaluation of Nutri-tea.

is viewed as a series of boxes (processing elements) connected by inputs and outputs. Flow charts and process diagrams are used to represent the process. The IPO model serves as a guide of the study.

The Input includes gathering of samples or raw materials such as okra, turmeric, lemon grass, guayabano leaves and mint leaves, kitchen tools and equipment. Careful selection of fresh raw materials was done in order to come up with a good quality product. The Process involves washing, air drying, toasting, crushing, weighing and packaging. *Air drying* is the natural drying being done so that the raw materials would dry up into its natural state. *Oven drying* could be a part of the process but sun drying and toasting were preferred because it gently dries up the seeds and leaves. After drying, *toasting* was done to further decrease the moisture content of the raw materials. *Crushing* was done for leaves to retain the usual texture of a tea leaves. The ingredients were weighed in tea bags. The primary packaging (organza linen as tea bag) and the secondary packaging (box) served as its protection from physical and chemical damages. The Output is the produced Nutri-tea (Nutritional Tea).

Figure 2 presents the methodological model of the evaluation of Nutri-tea. The

Input Process indicates the ingredients as dried okra, turmeric, lemon grass, guayabano leaves and mint leaves, the survey questionnaire and the respondents. The Survey questionnaire was validated by the professors, with respondents of 340 second year students and 10 instructors/professors. The **Process** involves conducting taste test which was done by the researchers and the survey questionnaire was distributed while conducting the taste test to 340 students and 10 professors. The sample product was served in individual paper cups during the taste test. Students were asked to evaluate the product guided by the criteria on the survey questionnaire. Retrieval of the questionnaire was done every after each survey. Statistical treatment and the analysis and interpretation of data was done after the retrieval of the survey questionnaire. The **Output** involves the evaluation of tea in terms of appearance, aroma, taste and marketability as well as the significant difference in the evaluation of the respondents.

The data gathering instrument utilized in this study was the survey questionnaire which was validated by selected instructors and professors. Likert scale with verbal interpretation was used for each criteria.

The criteria used a five-point Likert scale 1.00 – 1.49 means fully disagree, 1.50 – 2.49 means strongly disagree, 2.50 – 3.49 means moderately agree, 3.50 – 4.0 means strongly agree and 4.50 – 5.00 as fully agree.

Data Gathering Procedure

The following process flow was strictly implemented during the production of nutri-tea to attain product consistency and to standardize the process.

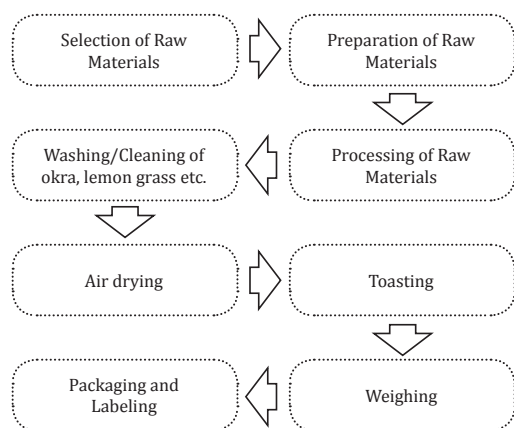


Figure 3. Production of Nutritional Tea

The researchers developed the nutritional tea by selecting and preparing the raw materials. The raw materials were okra, tanglad, turmeric, mint leaves and guyabano leaves. After processing and air drying the raw materials, the finished product was packed and labeled as Nutri-tea which developed nutri-tea was evaluated by the respondents based on its aroma, appearance, taste and marketability

Data Analysis

The statistical tools used to treat the data are the following: weighted mean and sloven's Formula/stratified random sampling. Weighted mean was used to determine the evaluation of the two groups as students and instructors.

Results and Discussion

Physical and Chemical Test of Nutri-Tea

Physical and chemical test of nutri-tea determined the tea's constituents and properties.

Table 1

Chemical Constituents of Tea

Chemical Component	A	B
Glucose	(+)	(+) (+)
Starch	-	-
Vitamin E	-	-
Protein	-	-
Lipid	-	-
Fiber	(+)	(+)

Table 1 present the produced tea that has glucose and fiber which implies that the tea is a good source of carbohydrate which can boost energy. The produced nutri-tea has fiber which helps lower cholesterol in the body, starch which is convertible into carbohydrates as energy booster.

Table 2

Phytochemical Constituent of Tea

Phytochemical	A	B
Phenol	(+)	(+)
Alkaloids	-	-
Triperpenoid	(+)	(+)
Glucoside	-	-
Saponins	(+)	(+)

Table 2 present the phytochemical screening of tea that has Phenols and Triterpenoids. Phenols and Triterpenoids is said to be an antibacterial and saponin as a laxative agent. Vinson and colleagues (2016) stated that phenols in tea are responsible for

its antioxidant activity. The pure catechins and phenolic acids found in tea are more powerful than the antioxidant vitamins C, E and β -carotene in an *in vitro* lipoprotein oxidation model. Alkaloids are organic substances found in all type of teas. There are three alkaloids present in tea: caffeine, theophylline and theobromine. These are organic substances that are found in all types of teas whatever its colour (<http://www.tekoe.com/en/cms/tea-and-health>). Triterpenoids are glycoside which has a wound healing and anti-scarring effect. Saponins has anti-inflammatory effect and lowers cholesterol. (beneforce.com, Uses, Benefits, Properties and Effects of Triterpenoid Saponins)

Differences on the Evaluation on the Produced Nutritional Tea

<i>Criteria</i>	<i>Professors</i>		<i>Student</i>	
	<i>OMW</i>	<i>VI</i>	<i>OMW</i>	<i>VI</i>
a. Appearance	3.82	SA	3.77	SA
b. Aroma	3.60	SA	3.77	SA
c. Taste	3.20	MA	3.68	SA
d. Marketability	3.16	MA	3.82	SA
Grand Weighted Mean	3.45	MA	3.76	SA

As can be gleaned in the Table 3, the two groups of respondents evaluated the produced tea in terms of appearance on Table 2. Both students and professors rated the tea in terms of appearance with a mean of 3.77 and 3.82 which corresponds to ***Strongly Agree***.

In terms of aroma, the professors and the students rated the tea of 3.60 and 3.77 respectively which corresponds to ***Strongly Agree***. Likewise, the produced tea was evaluated by both professors and students in terms of taste with a weighted mean of 3.20 correspond to ***Moderately Agree*** and 3.68 as ***Strongly Agree***. In terms of marketability, the professors and students rated the tea of

3.16 as ***Moderately Agree*** and 3.82 which corresponds to ***Strongly Agree***.

The verbal interpretation was based on the Likert Scale with its corresponding numerical value.

Conclusions

This study aimed to evaluate the benefits and marketability of dried okra, lemongrass (tanglad), turmeric, guayabano leaves and mint leaves as ingredients in making tea. By using these available ingredients, the researchers were able to produced tea which is affordable and can compete with the existing brands in the market. The produced tea was acceptable in terms of aroma, taste, appearance and marketability with the average mean of 3.80, 3.59, 3.81 and 3.44 respectively. It implies that the produced tea is saleable and can be marketed locally for consumption at an affordable price since the raw materials are available and locally grown in the country.

Recommendations

The percentage and chemical properties should be considered for those who are health conscious consumers. Packaging and labeling should be appropriate for market consumption.

The salient findings of the study are the following:

There are no differences in the evaluation of the benefits and marketability of dried okra, turmeric, lemon grass, guayabano leaves and mint leaves as an ingredient in making tea in terms of appearance, aroma, taste and marketability.

Further study on the determination of percentage and chemical properties should be conducted as a guide to health conscious

consumers. Improvement in packaging and labeling should be done in order to compete with the existing brands in the market.

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**QUESTIONNAIRE FOR BENEFITS AND MARKETABILITY OF DRIED
OKRA, TURMERIC, LEMONGRASS (TANGLAD), MINT LEAVES,
GUYABANO LEAVES AS INGREDIENTS IN MAKING TEA**

Name:(Optional) _____ Course/Yr.& Sec: _____

Directions:

Please complete the questionnaire by putting a check (✓) mark on the column which corresponds to your evaluation on the benefits and marketability of dried okra, turmeric, lemongrass(tanglad), mint leaves and guyabano leaves powdered as ingredients in making tea.

The following are the descriptive value the scale used:

- | | |
|---------------------------|----------------------------|
| 5 - Fully agree (FA) | 2 - Strongly Disagree (SD) |
| 4 - Strongly Agree (SA) | 1 - Fully Disagree (FD) |
| 3 - Moderately Agree (MA) | |

CRITERIA	5 (FA)	4 (SA)	3 (MA)	2 (SD)	1 (FD)
A. APPEARANCE					
1. The tea with dried okra, turmeric, lemongrass (tanglad), mint leaves, guyabano leaves is attractive to drink.					
2. It is free from sediments and particles.					
3. It has a clear liquid.					
4. The tea looks presentable.					
5. It has a light to golden brown color.					
B. AROMA					
1. The tea with dried okra, turmeric, lemongrass (tanglad), mint leaves, guyabano leaves has a strong odor.					
2. It has an enticing smell.					
3. It has a pleasant smell.					
4. It has a distinctive aroma.					
5. It has a sweet and mild odor of the leaves.					

C. TASTE	5 (FA)	4 (SA)	3 (MA)	2 (SD)	1 (FD)
1. The tea with dried okra, turmeric, lemongrass (tanglad), mint leaves, guyabano leaves has a unique taste.					
2. It has well-blended flavor.					
3. It does not have an after taste.					
4. The tea has a smooth taste.					
5. It has a sweet taste.					
D. MARKETABILITY					
1. The tea with dried okra, turmeric, lemongrass mint leaves and guyabano leaves cost is affordable.					
2. The consumers are willing to buy the purchased product at 10 pesos per sachet.					
3. The tea can be sold easily.					
4. The package design is attractive.					
5. The label states complete information.					

Comments/Suggestions: