The Seybold Report

ISSN 1533-9211

DOI 10.17605/OSF.IO/UM37S

PRODUCT ACCEPTABILITY OF SYZYGIUM LINEATUM (ROXB.) MERR & PERRY OR LUBEG PICKLE

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Abstract

The study delves into the possibility of developing an alternative pickle option among consumer that is why Syzygium Lineatum (Roxb.) Merr & Perry or Lubeg Pickle was pursued. With the used of physico-chemical analysis it was found that Lubeg when processed into a food product like pickle contains nutrients that is needed by the body. As indicated, it has carbohydrates, fats, calories, proteins and fiber necessary for growth and development. With the used of lexicon descriptors of the food product attributes such as it aroma, flavor, texture under the Quantitative Descriptive Analysis, it shows that the product was acceptable among respondents. Meanwhile in assessing if the product is acceptable to future consumers, it was found that the new product represented by Code A earned an "extremely willing" description among the respondents. This gives a positive result to the researcher an indication that the product could be accepted by the general public.

Keywords: Lubeg Syzygium Lineatum (Roxb.) Merr & Perry, Pickle, Aroma, Texture, Flavour

INTRODUCTION

Lubeg (Syzygium Lineatum (DC.) Merr & Perry is a tropical fruit bearing tree which is widely planted in Burma, China(Guangxi), Cambodia, Laos, Thailand, Java, Sumatra, Vietnam, Malaysia and the Philippines.[1] According to the study of Columna (2019) there are 1,374 species of the genus Syzygium to which 1,123 of which are accepted. In another study conducted by Traun (2020) there are 1,200 species of the said genus which is widely spread all over the tropical countries. The Syzygium Lineatum (Roxb.) Merr & Perry or commonly known as "Alebadu", "Lubeg", and "Malubeg" by locals in the Philippines is known as the cherry of the country because of its appearance which alike to cherry, however their taste is opposite where the latter is sour and the former is sweet. The tree usually measures 4 to 5 meters in height and its trunk and branches is color brown with flaky and corky appearance. Its leaves are shiny dark green and its flowers has a perfect shape and has spikes. The fruit looks like a cherry which is round in shape. The young fruits are color white and when ripen it turns to reddish or even red purple when it really is super ripen. The flesh is spongy and with lots of moisture hence it is highly perishable. The taste is sour if it is not ripening yet. The fruit will only last for about 2 weeks hanging for fruits which are ripen and immediately falls down when it is perish or if it reaches its fullness of ripeness. Each tree produces a huge number of fruit every time it is in season. And because the people have only limited knowledge when it comes to food processing it obviously reflects the waste generated from each fruit every time it bears fruit hence it encourages fruit flies to flock it which cause a dirty surroundings. According to the research of Columna (2019) it only inhabits to some areas in the province of Cagayan and Isabela and more in the province of Apayao where strategically included this tree as a source of income generation for most of the people in the area. As mentioned, Isabela province is also

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included in the areas to where this tree could possibly see particularly in Isabela State University where there are at least 9 planted Lubeg tree within its vicinity. Before, numerous tree was treated as commodity that could possibly add in the income generation of the campus, however Lubeg have been neglected because of its sour taste and only few knew that behind the sour taste of the fruit lies a distinct flavour that can replace people's demand for mango or any other sour fruit. Lubeg by-products have not yet explored extensively because people have limited knowledge as to nutrient content and economic benefits of the tree. However notable research studies have been conducted to explore at least its taxonomic classification, molecular identification, (Columna 2019); Phytochemical Analysis of Lubeg (Zarate-Manicad, 2016); Analysis of Essential oils from leaf of Syzygium lineatum (DC.) Merr & Perry as well as notable production of its fruits have been recorded just like the Apayao State College (ASC) through DA-Bureau of Agricultural Research (BAR) in which the province of Apayao were given budget for the production of Lubeg and among the products produced are Lubeg wine, jam, vinegar, juice, prunes and dried and sweetened. The limited number of products produced however only proves that there are still more products out of Lubeg fruit or other by-products could possibly use in food production. Pickling as a way to preserve food is a potential process into making additional food product from Lubeg. It is a method in which vegetables, fruits and even herbs were soaked in a brine solution with a citric acid to prolong its shelf life. And the process of it adversely affects the texture and flavor of the food hence quality is a critical element to consider when pickling desired food. Over the past years, people who dwell on pickling as an income generation have only limit themselves to pickling common vegetable and fruits like cucumber, radish, mango, dill and the like without further studying extensively other plants that could also have a potential to replace if not to compete with other pickled products available in the market. That actually prompted the researcher to explore pickling process with the use of Lubeg fruit. And somehow the success result of it will lead to a much more products that could be produced using Lubeg fruit or other by-products.

MATERIALS AND METHODS

Collection and Preparation of Lubeg Pickle Samples

The preparation process of pickling Lubeg Fruit is shown in Figure 1. Lubeg fruit is harvested from the Lubeg trees at ISU San Mariano Campus. Selection of fruit is based on the following (a) color, (b) free from blemishes, (c) medium size. Approximately there are 3 kg collected which is used in the study.

1. 3 kg lubeg fruit is peeled and seeds are discarded and soaked in a brine solution.
2. Simmer 2 cups of vinegar.
3. Dissolve 3/4 cup of sugar and stir to dissolve.
4. Soaked peeled Lubeg Fruit and let it simmer.
5. Let it cool, once cooled put it in a jar.

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The Lubeg fruits are washed and peeled making sure that seeds are remove and properly remove the excess water. After which using air dried method, the researcher used Citric Acid which has 5% acidity and 3/4 sugar to balance the taste of the solution. Before bottling, bottles are sanitized to avoid the growth of pathogens. After bottling, the finish products are soaked in a hot water as a means of pasteurizing the product. A process to eliminate microorganism that may cause spoilage to the finish product.

Figure 1: The Process of Making Lubeg Pickle

Proximate Analysis of Pickled Lubeg

After several days, the pickled Lubeg is brought to the laboratory to access further the nutrient content present on it. It is believed that the effectiveness of pickles is accurately shown after several days to check the incorporation of ingredients it its flavor and changes occur in the solution.

RESULTS AND DISCUSSIONS

Table 1: Sample Net Weight: 500g

Nutrition Facts		
Serving size: 65 g No.of servings per container:8		
Amount per serving		
		%RENI
		4%
Calories (kcal) 107		
Calories from fat 49 kcal		
Total fat (g)	5.4	-
Total Carbohydrates (g)	2.3	-
Crude Fiber (g)	0.1	-
Total Protein (g)	12.1	17%
*Percent RENI values are based on 2015 RENI PDRI reference male adult requirement of 19-29 years old		

The product was submitted for a proximate analysis for the purpose of assessing the nutritional content it has. Based on the table shown above, there are 5.4 grams total of fat. Meanwhile the total carbohydrates is 2.3 in grams. While the crude fiber which measures the amount of fiber is 0.1 grams. Meanwhile there are 12.1 grams of total protein present in the product.

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Table 2: Participant's acceptability on the new product (Syzygium Lineatum (Roxb.) Merr & Perry or Lubeg Pickle) versus the pickle available on the market

Code A		
VARIABLE	**MEAN**	**DESCRIPTION**
1. Color/Appearance	4.49	Acceptable
2. Aroma/Smell	4.38	Acceptable
3. Taste/Flavor	4.4	Acceptable
CATEGORICAL MEAN	**4.43**	Acceptable
Code B		
1. Color/Appearance	4.24	Acceptable
2. Aroma/Smell	3.85	Acceptable
3. Taste/Flavor	3.76	Acceptable
CATEGORICAL MEAN	**3.95**	Acceptable

As shown above, Code a represented by the new product garnered 4.49 mean average on its color/appearance with acceptable description. While the variable Aroma/smell have a mean average of 4.38 with Acceptable as a description. Finally, the taste/flavor of the product also garnered an acceptable description with 4.4 mean average. The total mean average of which is 4.43 with Acceptable description. Meanwhile Code B represented by the product already available in the market, its Color/Appearance is 4.24 mean average, same with the aroma/smell with 3.85 mean average while taste/flavor earned a 3.76 mean average. The description of the three variable are all acceptable. Empirical study on the consumer behavior have suggested that one of the primordial consideration for consumers to likened a product is its palatability and the quality of food and other quality parameters such as its nutrition content, Ackbarali1, D & Maharaj, R. (2014). The study added that for food and beverage industry they must see to it that attributes of food such as the color/appearance, aroma/smell and taste/flavor must be acceptable to the consumers.

Table 3: Participant's Willingness to Purchase on the New Product (Syzygium Lineatum (Roxb.) Merr & Perry or Lubeg Pickle) Versus the Pickle Available On the Market

VARIABLE	MEAN	DESCRIPTION
Code A	4.49	Extremely willing
Code B	4.00	Very willing
CATEGORICAL MEAN	**4.24**	Extremely willing

The participants' willingness to purchase the new product versus the pickle available in the market is shown above. Code A or the new product earned 4.49 mean average with a description of 'Extremely willing. Whilst, Code B or the product already existed in the market have a 4.00 mean average with 'Very willing' as a description. The categorical mean however is 4.24 with a description of 'Extremely willing'. This findings is supported by the study of Sogari, G. et.al (2021) that consumers tend to purchase products which contains nutritional information and with innovation on the food product itself. Hence the result suggests that the new product must be innovative to be likened and most probably to be purchased by the consumers.

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RETURN ON INVESTMENT

Table 4: Yield: 5 bottles (500ml)

Ingredients	Quantity (AP)	Quantity (EP)	Purchase Price	Unit Cost (AP)	Extension Cost
Lubeg fruit	3 kg	2 3/4 kg	90/kg	32.73/kg	90.01
Vinegar	473 ml	473 ml	156.20/ml	0.33/ml	156.09
Sugar	1 kg	1 kg	90/kg	0.09/kg	90
Salt	150grams	150 grams	12/grams	0.08/gram	12
Total Recipe Cost					348.10
Cost per bottle					69.62

Mark-up = Cost per serving * mark-up rate
= 69.62*2.5
= 174.05
Selling price = cost per serving + mark-up
= 69.62+174.05
= Php. 243.67

CONCLUSION

This study investigated the acceptability of Syzygium Lineatum (Roxb.) Merr & Perry or Lubeg as a pickle and compared it with the pickle already available in the market. Specifically, it focuses on the proximate analysis to make sure that the product contains nutritional benefits and that it is safe to eat once it is commercialized. As reflected, it contains 107 kcal, 4.28% of the calories while calories from fat is 49 with a total of 1.96% from the total calories (25-30%) which needed by the body. The total fat of the product is 5.4 grams (2.16%) from the 35% total requirements of fat that we need to consume each day. The total carbohydrates of the pickled product are 2.3grams not more than half of the total carbohydrates that the body requires. The pickle also contains crude fiber 0.1 grams and the total protein is 12.1 grams. The nutritional benefits of a certain food product are mostly reflected on the labeling of the product itself. Campos, S., (2011) said that it is associated with healthier diet thus in influence the buying behaviour of the consumer. The success of any newly introduced food product in the market relies primarily on its attributes like color/appearance, aroma/smell and taste/flavor. In table 2 where reflects the acceptability of the participants on the newly produced product it only concludes that the Code A or the new product is acceptable by the consumers along with their acceptability on the pickle available in the market. Ackbarali1, D & Maharaj, R. (2014) in their study stated that the product flavor quality affects the total acceptability of consumer in the product. Hence innovation in the product most especially on its flavour is necessary. Moreover, for any food or beverage products offered in the market, producers are encouraging to understand those food attributes to enhance or innovate a much more attractive product.

Recommendation

The researcher recommends that the product may be reproduce incorporating additional flavour in the product for other alternative purposes. It is also recommended to have a return on investment on the product to see whether it is profitable or not. Additionally, it is recommended to develop the brand label of the product for marketing

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ISSN 1533-9211
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purposes.

Acknowledgements

The author is grateful to the Department of Agriculture - Cagayan Valley Integrated Laboratory for their expert support and technical assistance in letting the researcher used their laboratory facilities in analyzing data needed in eliciting information on the samples. Gratitude is also given to the Isabela State University - San Mariano Campus for financing some of the expenses of this research study.

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