

Formulation and Evaluation of Nipa Fruit (*Nypa fruitican*) Tart

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Abstract

Nypa fruitican know as Nipa palm is the only palm considered as mangrove. The Nipa palm is one of the most important economic Philippines crop. Leaflets are used for making handicrafts, young seeds and shoots are edible and fermented juice are extensively use as beverages. With this, this research experimented on formulation tarts out of Nipa fruits. It aimed to evaluate its characteristics in terms of color, texture, taste and aroma. Also to document the preparation of the Nipa fruit tart and overall acceptability. The results show that the tart is light brown in Color. Majority of the respondents taste them sweet and moderately crunchy. All of the respondents agreed that the tart is aromatic. Therefore, it is concluded that the tart is edible and highly acceptable. Further, it is recommended to gather the matured fruits and improvement in the baking process should be made.

Keywords: *Nypa fruitican* fruit tart, mangrove tart, native pastry

Introduction

Nipa Palm or *Nypa fruticans*, a native to the coastlines and estuarine habitats of the Indian and Pacific Oceans, is an unusual palm tree because its trunk grows beneath the ground and only its leaves and flower stalks grow above the surface. The trunk can reach up to 45 cm in diameter and the leaves can each be up to 6 m long. The inflorescence of this palm is globose and comprised of female flowers at the tip and male flowers at the lower branches. It is edible and also yields sugary sap used mainly to make alcoholic beverages, syrup, sugar, and vinegar. The seed is eaten raw; it is harvested when fruits are immature. Plant parts have medicinal uses and specifically used in traditional medicine to treat toothache, headache, ulcers, and centipede bites. The leaves are used for thatching and making baskets and mats, and considered to be of

superior quality than coconut thatch. Nipa palm can be grown from seeds or by dividing off suckers (Plants for a Future, 2020).

The nipa palm is one of the most important economic Philippine crops. It differs from most palm in the lack of an upright stem, trunkless, developing inflorescences at 1 meter height. The leaves are commonly use for thatching. Leaflets are used for making hats, baskets, mats, raincoats, wrappings for suman. The midribs are used for making brooms; the petioles for fuel. (Philippine Medicinal Plants, 2020)

In South-East Asia, there is a long tradition (hundreds of years) of using palm sap obtained by tapping the inflorescence stalks (peduncle) as a source of treacle (molasses), amorphous sugar ('gula malacca'), alcohol or vinegar. The slightly fermented sap called 'toddy' ('nera' in Indonesia and Malaysia, 'tuba' in the Philippines) is sold and consumed as local beer. The long, pinnate leaves (fronds) provide material for thatching houses. In the Philippines, Malaysia, Indonesia and Thailand the fabrication of thatching panels, called locally 'shingles', 'pawid' or 'atap', is significant local source of income. Leaflets and midribs are used for manufacturing of brooms, baskets, mats and sunhats. The white endosperm of immature seeds is sweet and jelly-like, and is consumed as a snack. The cuticle of young, unfurled leaves has locally been used as cigarette wrapping. Various parts of nipa palm are a source of traditional medicines (e.g. juice from young shoots is used against herpes, ash of burned nipa material against toothache and headaches) and material for salt extraction. Some early trials to use the endocarp of mature fruits, called 'plant ivory', for the manufacture of buttons failed because they were vulnerable to attack by fungi, and have largely been replaced by plastic materials. The use of the hard shell (mesocarp) in the making of bottons, necklaces and other fashion apparels is successful in Nigeria. Nipa fronds are commonly used as sails by local fishermen (CAB International, 2020)

Unripe endosperm extract of *Nypa fruticans* showed high total phenolics, total flavonoid content, and antioxidant capacities as compared to ripe endosperm extract. Chlorogenic acid, protocatechuic acid, and kaempferol were identified as major compounds in the extract. Thus, unripe endosperm extract of NF could be used as natural antioxidant (Prasad, 2013).

The fruit is rich in carbohydrates, fibers, minerals and vitamin A (Osabor, et al 2008). With this, this study aimed to produce tart from Nipa fruits. A tart is an open pastry case containing a filling. With this, study formulated *Nypa frutican* fruit tart to have an innovative way of serving and eating the fruit.

Objectives

The main objective of this study is to produce tarts from Nipa fruits. Specifically,

1. Document how the tarts from Nipa fruits are made;
2. Determine the characteristics of the Nipa fruit tart in terms of color, texture, taste and aroma;
3. Determine the overall appeal or acceptability of the Nipa fruit tart

Significance of the Study

This study is significant to the following stakeholders:

Student Researches: as being able to discover the Nipa fruit can be eaten in the form of tart and help them to be aware that this unfamiliar fruit is delicious.

PSU Faculty Members: the research shall give them new idea that there could be more to do, made and develop from the “sasa” which they can teach to their student

Entrepreneurs: the Nipa palm (*Nypa fruitican*) fruit as income generating product which can help the to introduce this product to the market

Community: it can be a livelihood and promote Nipa palm (*Nypa fruitican*) as one town, one product through delicacy

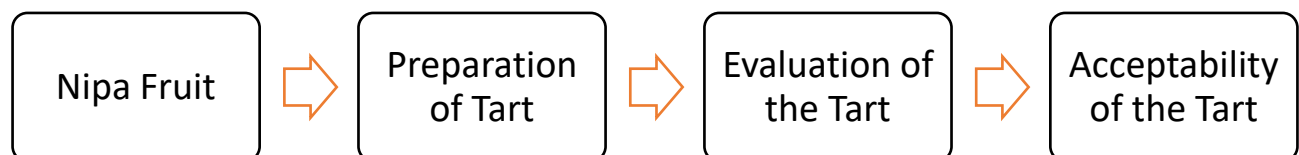
Consumer: to enjoy other product from Nipa palm fruit

Province of Pangasinan: to establish the Nipa fruit tart product and give pride to the people of Pangasinan

Nipa Palm Plantation Owner: this product will provide an extra income in terms of producing new products that comes from the Nipa palm fruit.

Future Researcher: this would serve as a future reference to their research.

Conceptual Framework



Materials and Methods

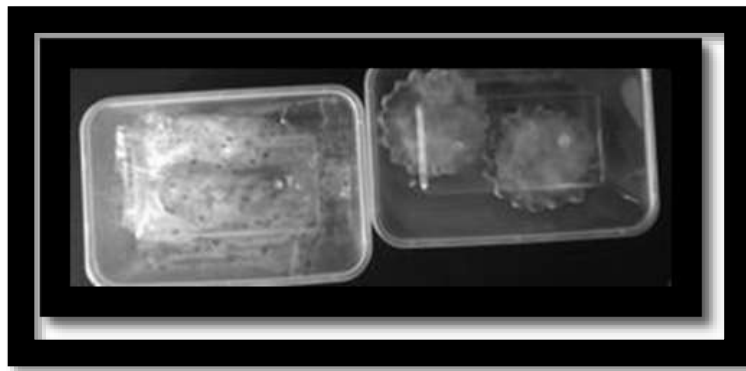
Research Design

This study used experimental method to formulate Nipa fruit tart and determine its acceptability.

Data Gathering Instruments

The characteristics and acceptability of the finished product were evaluated by the respondents through the use of evaluation form. Sensory evaluation was conducted to determine the products characteristics and its acceptability in terms of color, texture and aroma, as well as to determine the products overall acceptability.

Development of Nipa Fruit (*Nypa frutican*) Tart



Ingredients

Crust

- 2 1/1 Cup All –Purpose Flour
- ½ Cup Cold Butter
- ½ Cup Ice cold Water
- Whole egg
- 1 ½ tbsp white sugar
- ½ tsp salt



Filling

- 500 nipa frutican meat
- 2 tbsp powdered milk



- $\frac{3}{4}$ cups white sugar
- $\frac{1}{2}$ tsp salt
- 1 egg
- $\frac{1}{2}$ tsp vanilla
- $\frac{1}{2}$ cup all- purpose flour

Procedure:

For the Filling:

1. In a medium size saucepan, add all the filling ingredients and bring it to a boil over medium heat. Adjust to low once it boils and just simmer until the mixture becomes thick. Keep on stirring to prevent sticking from the bottom.



For the crust:

1. In a mixing bowl, add the salt, sugar, flour and egg. Mix well



2. Slice the butter into cubes with a knife, then press it into the mixture using a pastry cutter or just use a fork to combine.



3. Moisten the dough with the cold water, add it little by little. Combine it well and gather to form a ball.



4. Refrigerate the dough for 30 minutes



5. Roll out and flatten the dough with a rolling pin to about 1/8" thick.



6. Cut out round pieces of the dough using egg rings.



7. Lightly dust each tart molds with flour, then place each cut out dough in the molds. Gently press the dough to cover the bottom and the sides of each mold.
8. Spoon the filling on each mold. And start covering each molds with dough toppers. Don't forget to mark it with fork holes on top to release air. Brush with egg wash.
- 9.



10. Place in a pre-heated oven and bake at 170'c for 30-40 mins

Results and Discussion

This chapter presents the result of the study, interpretation of the data during the conduct of the study.

Color of the Nipa Tart

Table 3 illustrate the Color of Nipa Tart (*Nypa frutican Tart*). It illustrates that 100% of the respondents answered that the Nipa Tart (*Nypa frutican Tart*) is Light Brown in color

Table 3. Color of Nipa Tart

Color	Percent	Valid Percent	Cumulative Percent
Light Brown	100.0	100.0	100.0

Taste of Nipa Tart

Table 4 illustrate the taste of Nipa Tart (*Nypa frutican Tart*). It illustrate that 63.6% of the respondents answered that the taste of nipa tart is sweet while 36.4% of the respondents answered that the nipa tart is moderately sweet.

Table 4. Taste of Nipa Tart

	Percent	Valid Percent	Cumulative Percent
Valid Sweet	63.6	63.6	63.6
Moderately Sweet	36.4	36.4	100.0
Total	100.0	100.0	

Texture of the Crust of Nipa Tart

Table 5 illustrate that 18.2% of the respondents answered that the crust of nipa tart is not crunchy and the 18.2% of the respondents answered Crunchy. While the 63.6% of the respondents answered that the nipa tart crust is moderately crunchy.

Table 5. Crust Texture of Nipa Tart

	Crust Texture	Percent	Valid Percent	Cumulative Percent
Valid	Not Crunchy	18.2	18.2	18.2
	Moderately Crunchy	63.6	63.6	81.8
	Crunchy	18.2	18.2	100.0
	Total	100.0	100.0	

Texture of the Filling of Nipa Tart

Table 6 illustrate that the 72.7% of the respondents answered soft while the 27.3% of the respondents answered moderately soft.

Table 6. Texture of the Filling of Nipa Tart

	Percent	Valid Percent	Cumulative Percent
Valid Soft	72.7	72.7	72.7
Moderately Soft	27.3	27.3	100.0

Total	100.0	100.0
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Aroma of Nipa Tart

Table 7 illustrate that the 100% of the respondents answered aromatic.

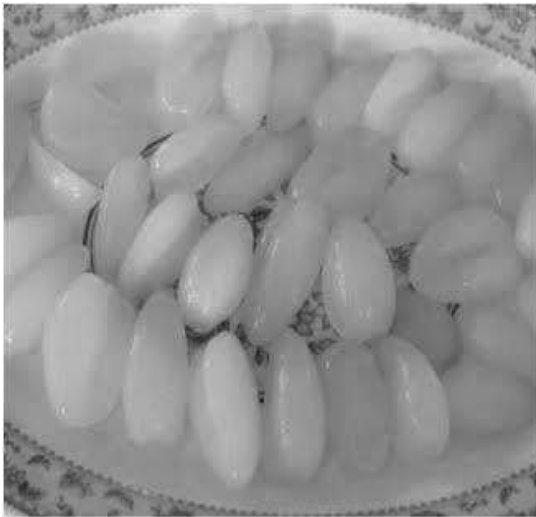
Table 7. Aroma of Nipa Tart

	Percent	Valid Percent	Cumulative Percent
Valid Aromatic	100.0	100.0	100.0

Ingredients and Procedures of Nipa Fruit Tart Baking



NIPA FRUIT



NIPA FLESH

NIPA TART FILLING

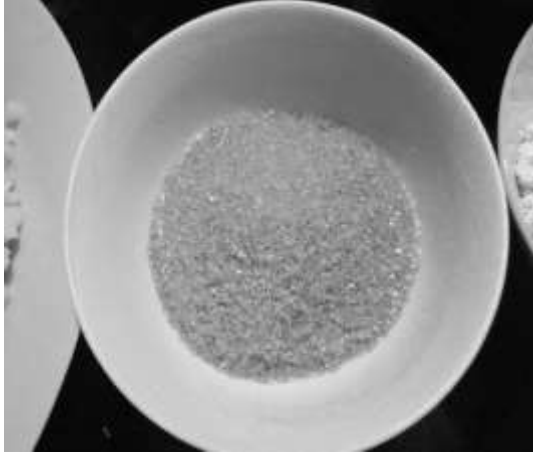
INGREDIENTS



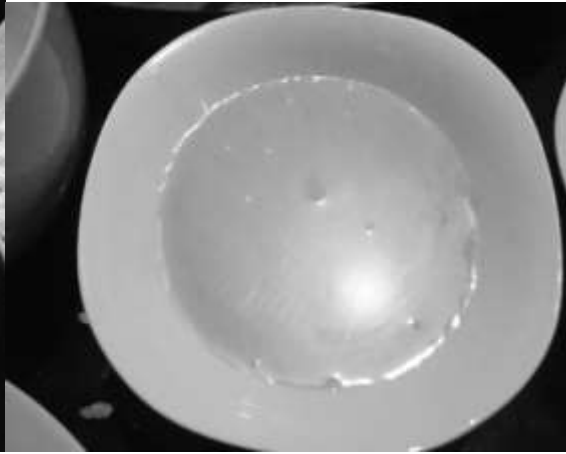
WATER



EVAPORATED MILK



BROWN SUGAR



CONDENCED MILK



CORN STARTCH



COMBINED ALL THE INGREDIENTS

NIPA TART CRUST

INGREDIENTS



ALL PURPOSE FLOUR

BUTTER



ICE COLD WATER COMBINED



ALL THE INGREDIENTS

BAKING



Flattening and Molding



FINISH PRODUCT

Conclusions

With the results of the study, the following are concluded:

1. The Nipa fruit tart is doable.
2. The Nipa fruit tart is edible.
3. The Nipa fruit tart is acceptable among consumers in terms of color, texture, taste and aroma.

Recommendations

With the results of the study, the following are recommended:

1. During gathering of Nipa fruits, the matured or 5 month old fruits should be selected.
2. The consumer acceptability and shelf life should also be determined
3. Production could also be modified using different amount of sugar.
4. Standard recipe could be developed, transmitted to local Nipa farmers for their livelihood.

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