



Utilization of Atis “*Annona squamosa* Linn” Desserts

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Abstract Atis or *Annona squamosa* Linn or Sugar Apple in English is one of the top 10 tropical and exotic fruits but one of the forgotten fruits in the Philippines. It is a sweet and creamy fruit with lots of seeds. Its flesh is sweet, white to yellow and resembles and taste like custards. The edible portion coats the seeds generously. It has a distinct sweet smelling fragrance. It is high in energy, an excellent source of Vitamin C and manganese, a good source of thiamine and Vitamin B 6, and provides Vitamin B2, B3, B9, iron, magnesium, phosphorus, and potassium in fair quantities. This study utilized this fruit as ingredient of different kinds of desserts such calamay, deep fried dessert, butter scotch and tart. These desserts are prepared in different ways using tools, utensils and equipment which are available in rural communities. Dessert is important because it can enhance ones physical and emotional wellness in numerous ways if approached properly. Hence, the objectives of this study is to determine the acceptability levels of different dessert products using atis as main ingredient in the five sensory attributes such as appearance, taste, flavour, texture and overall liking. It further aimed to determine the shelf life and the marketability of each product. This is an experimental study with 100 participants composed of food experts to judge the different products using the four point Hedonic Scale. It was found out that the four products are all acceptable in the five sensory attributes. Each product has different shelf life with calamay having the shortest shelf life and butter scotch and tart having the longest. It was also found out that all the products are marketable. It can be concluded that Atis “*Annona squamosa* Linn” can be used in producing different desserts. It is then recommended that these products be promoted so that the forgotten Atis can gain recognition as a good ingredient for dessert and not only to be eaten as raw and so can be fully utilized.

Keywords exotic, forgotten fruit, sensory attribute, acceptability

INTRODUCTION

Food is the basic necessity for all of living creature and they have to work hard to get this. It is the third most important thing for living beings to live after air and water. This shows the importance of food for life. Food can be taken through the three meals a day. Three meals a day is important to keep the body running so that daily functions can be managed properly. A meal is composed of rice or carbohydrate-rich food, soup, vegetable, main dish, salad, and dessert. This meal composition can vary depending on the choice of the diner, but usually a meal is ended with a dessert.

The tradition of eating a dessert after having a meal is being followed by many cultures across the globe. This delectable dish served at the end of a dinner signifies completion of the meal and creates a sense of goodness within a person. Apart from the cultural importance and the feel-good factor, a dessert can also offer a variety of health benefits. A healthy dessert aids in digestion, adds extra vitamins and fiber to ones diet, boosts immunity, reduces blood pressure, balances hormones in the body, lowers the levels of bad cholesterol, improves good cholesterol, and acts as an anti-depressant (Benavides, 2016).

According to the dictionary, dessert is a confectionery course that concludes a main meal. It usually consists of sweet foods, and possibly a beverage such as dessert wine or liqueur, but may include coffee, cheese nuts, or other savory items. The term dessert can apply to many confections such as cakes, tarts, cookies, biscuits, gelatins, pastries, ice creams, pies, puddings, custards and

sweet soups. Fruit is also commonly found in dessert courses because of its naturally occurring sweetness. Some cultures sweeten foods that are more commonly savory to create desserts.

In this study, the researcher ventured to produce four kinds of desserts using Atis or *Annona squamosa* Linn as an ingredient in producing them. Atis is used to promote the fruit which is one among the top ten exotic or tropical fruit in the Philippines but is also among the forgotten fruits in this country, forgotten because atis is one among the fruits which is only produced on backyard scale and thus have limited and declining supply (Dy, 2016).

Atis fruit is from a small tree 3 to 5 meters in height with leaves which are somewhat hairy when young, oblong, 8 to 15 centimeters long, with a petiole 1 to 5 centimeters long. Its fruit is large, somewhat heart-shaped, 6 to 9 centimeters long, the outside marked with knobby polygonal tubercles. When ripe the fruit is light yellowish-green. Flesh is white, sweet, soft, and juicy, with a mild and very agreeable flavor. It is nutritious because it is rich in Vitamin C, manganese, B Vitamins, iron, magnesium, phosphorus and potassium in fair quantities (Stuart, 2016).

This study ventured to produce Atis Calamay, Atis Butter Scotch, Atis Fried Dessert, and Atis Boat Tart. Calamay is a sweet concoction of ground sticky rice, sugar, coconut milk, vanilla and some peanuts (optional). It is sealed in smooth coconut shells that are sealed shut by a characteristic band of red tape. Butter Scotch, on the other hand, is a type of confectionery whose primary ingredients are brown sugar and butter, but other ingredients are part of some recipes, such as corn syrup, cream, vanilla and salt. The earliest known recipes, in mid-19th century Yorkshire, used treacle (molasses) in place of or in addition to sugar. The Fried Dessert in this study is a modified doughnut, modified because it is with blended Atis pulp filling. According to Webster dictionary doughnut is a small fried cake of sweetened dough, typically in the shape of a ball or ring. Meanwhile a tart is a baked dish consisting of a filling over a pastry base with an open top not covered with pastry. The pastry is usually short crust pastry; the filling may be sweet or savoury, though modern tarts are usually fruit-based, sometimes with custard. A boat tart is a tart with a crust of a shape of a small boat.

OBJECTIVES

This study was conducted to produce four types of dessert such as Atis Calamay, Atis Butter Scotch, Atis Fried Dessert, and Atis Boat Tart utilizing atis as ingredient, and determine the acceptability of the four desserts in five sensory attributes such as appearance, taste, odor, texture and overall liking. It further aimed to determine the shelf life and the marketability of the products.

METHODOLOGY

This study is experimental, producing desserts with atis as ingredients. The finished products were tasted by 100 participants who are food experts to judge the products using the four point Hedonic scale. To ensure the reliability of the result in judging the taste of the products, the participants were blindfolded because the appearance of the product can insinuate the judgment of the taste. After tasting one product, the participants were asked to drink water before tasting another product to remove the taste of the next product. The rest of the sensory attributes were done removing the blind fold of the participants. The participants were asked to rate the products using the following rating scale 4- Very Acceptable, 3- Acceptable, 2 - Less Acceptable and 1 - Not Acceptable as the lowest. For purposes of interpretation, the following range were used; 3.25 - 4.00 - Very Acceptable, 2.50 - 3.24 - Acceptable, 1.75 - 2.49 - Less Acceptable and 1.00 - 1.74 - Not Acceptable.

RESULTS AND DISCUSSION

The researcher was able to produce the products by using the following recipes.

Atis Calamay

In preparing Atis Calamay, the following ingredients were used; 1 kilograms blended Atis pulp, 3 cups glutinous rice flour, 4 cans(400 ml each) coconut milk, 2 cans coconut milk for curd (latik), 3 cups brown sugar, 1 table spoon pandan or vanilla extract. This is prepared by following the procedure; Blend the Atis pulp until fine, set aside. Then prepare a pan, pour coconut milk then cook in a low heat. Keep stirring until it curdles. Set aside. In a large pan, combine the blended atis pulp, sweet rice flour, coconut milk, sugar and vanilla then cook in a low heat. Keep stirring until thicken. Prepare the cleaned coconut shell, fill it with the mixture, sprinkle with coconut curd and seal the coconut shell with a red tape. Have it ready to serve.

Atis Butter Scotch

In preparing the Atis Butter Scotch the following ingredients were used; 1/2 cup granulated sugar, 1/2 cup packed brown sugar, 1/4 cup butter or stick margarine, softened, 2 large egg whites, 1 teaspoon vanilla extract, 1 1/4 cups all-purpose flour, 1/2 teaspoon baking powder, 1/4 teaspoon salt, Cooking spray, 1/2 cup blended Atis pulp. The procedure in preparing the Atis Butter Scotch are as follows: Preheat oven to 350 °C. Beat sugars and butter at medium speed of a mixer until well-blended (about 4 minutes). Add egg whites, atis pulp and vanilla; beat well. Lightly spoon the flour into dry measuring cups, and level with a knife. Combine flour, baking powder, and salt; stir well with a whisk. Add flour mixture to sugar mixture; beat at low speed just until blended. Spread batter evenly into an 8-inch square baking pan coated with cooking spray; sprinkle evenly with morsels. Bake at 350°C for 28 minutes or until a wooden pick inserted in center comes out clean. Cool in pan on a wire rack. Slice into squares then wrap in colored water cellophane.

Atis Fried Dessert (Doughnut)

In this product, two subproducts were prepared; first was for the filling and the second was for the dough. For Atis filling, the following ingredients were used: 1/2 cup blended Atis pulp, 1/4 cup refined sugar, 1/4 cup water, 1/8 teaspoon vanilla. The Atis Filling was prepared with the following procedure followed; Mix all ingredients into a bowl and place in sauce pan. Cook under low fire until thickened. Remove from fire and let it cool ready for filling the dough. The ingredients for Atis Fried Dessert Dough are as follows; 4 cups bread flour, 1/3 cup refined sugar, 1/2 cup margarine, 3 pcs. Egg yolk, 1 1/2 teaspoon salt, 1 1/2 cup water, 5 teaspoon yeast, 1/4 cup lukewarm water for yeast and 1 teaspoon sugar for yeast. The procedure in preparing Atis Fried Dessert are the following; Dissolve yeast in 1/4 cup lukewarm water. Stir. Sprinkle with 1 teaspoon sugar then cover and set aside to ferment. Sift flour, measure and set aside. Mix together in a mixing bowl water, sugar, salt, egg yolk, margarine and foamy yeast. Add the flour into the mixture, mix thoroughly and knead the dough until smooth and elastic and have it rest for 20 minutes. Punch the rested dough, divide and weigh the dough into portion size. Flatten the dough with a rolling pin, fill with Atis filling then roll to close the ends, its shape is like that of a dough nut. Allow to rest for 30 minutes. Fry the dough in hot oil until golden brown. When done roll into refined sugar then have it ready to serve.

Atis Boat Tart

In preparing Atis Boat Tart, just like the doughnut two sub products were prepared the filling and the crust. For the filling the following ingredients were also used; 1 cup Atis pulp, 1/2 cup refined sugar, 1/2 cup cornstarch, 1/2 cup evaporated milk, 1 cup water, and 1 teaspoon vanilla. These ingredients were mixed together and cooked in sauce pan under low fire, stirred constantly until thickened. Then set aside for the crust. After the filling the next to be prepared is the crust which needed 2 cups all purpose flour, 1/4 cup butter, 1 piece egg yolk, 1/4 cup water, 2 tablespoon refined sugar and 1/4 teaspoon salt. The following procedure was followed; Dissolve sugar and salt in 1/4 cup

cold water, then add egg yolk. Cut-in flour and margarine using pastry blender until pea size. Gradually sprinkle cold water solution over it and continue cutting-in. Knead, divide the dough and place in greased boat tart mold. Place the previously prepared filling and bake in a pre-heated oven for 30 minutes or until brown. Allow it to cool, when cold, wrap it in colored water cellophane.

In the preparation of the four desserts of Atis, the common tools, utensils and equipment used were measuring cup, measuring spoon, wooden ladle, mixing bowls, sauce pan, rubber scraper, stove; boat tart mold and pastry blender (specific for boat tart), oven for butter scotch and boat tart.

Table 1 Acceptability of the products in five sensory attributes

Sensory attributes	T1	T2	T3	T4	Composite mean	Description	Rank
Appearance	3.48	3.64	3.52	3.75	3.48	VA	5
Taste	3.57	3.68	3.76	3.82	3.69	VA	1
Odor	3.70	3.72	3.50	3.68	3.65	VA	2.5
Texture	3.45	3.75	3.84	3.82	3.65	VA	2.5
Overall Liking	3.48	3.60	3.54	3.70	3.58	VA	4
Composite Mean	3.54	3.68	3.63	3.75	3.60	VA	
Rank	4	2	3	1			

Legend: T1 - Atis Calamay T2 - Atis Butter Scotch T3 - Atis Fried Dessert T4 - Atis Boat Tart

Table 1 shows the acceptability levels of the four atis desserts in five sensory attributes such as appearance, taste, odor, texture and overall liking. It clearly manifests that the four products were rated Very Acceptable in all the five sensory attributes or in appearance, taste, odor, texture and overall liking but they differed in the numerical rating or the mean. In terms of Appearance, Atis Boat Tart ranked first with weighted mean 3.75, it was followed by Atis Butter Scotch, 3.64, Atis Fried Dessert and Atis Calamay followed with a weighted mean of 3.52 and 3.48 respectively. Boat Tart took a lead in taste and overall Liking whose weighted means are 3.82 and 3.70 respectively. On the other hand, Atis Butter Scotch emerged as number 1 in odor while Atis Fried Dessert ranked first in texture. Atis Fried Dessert ranked first in texture because it has very soft texture and Atis Boat Tart ranked next to Atis Fried Dessert. The flakiness, crunchiness and the tenderness of the crust of the tart were very evident in the product. These are the qualities of a good tart crust. Butter Scotch ranked first in Odor because of the nice blend of the smell of the ingredients.

Meanwhile, the overall rating of the product with reference to the composite mean of five sensory attributes of the product, Atis Boat Tart ranked first with the composite mean of 3.75 followed by Atis Butter Scotch (3.68), Atis Fried Dessert (3.63) and Atis Calamay as the last with 3.54 as the composite mean.

When comes to the five sensory attributes, the composite mean of taste of the four products was 3.69 so taste ranked first. Odor and texture of the four products got a tie with a composite mean of 3.65, while fourth is the overall liking (3.58) and the last is the appearance with 3.48 as the composite mean.

Table 2 Shelf life of Atis desserts

Products	No. of Days														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T1 - Atis Kalamay	/	/	/	/	x	x	x	x	x	x	x	x	x	x	x
T2 - Atis Butter Scotch	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
T3 - Atis Fried Dessert	/	/	/	/	/	x	x	x	x	x	x	x	x	x	x
T4 - Atis Boat Tart	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Table 3 discloses the shelf life of the four Atis Desserts. In knowing the shelf life of the products, the products were observed daily while placed at room temperature. It shows that both Atis Butter Scotch and Atis Boat Tart lasted for 15 days. On the sixteenth day, the crust of the Atis Boat Tart started to soften, the Atis Butter Scotch also softened on the sixteenth day. Among the products, Atis Calamay was the first to spoil. On the fifth day molds were found on the product. It can be deduced that method of preparing the product is a factor that affect shelf life. Atis Butter Scotch and Boat Tart were both baked, Calamay was boiled until a thick consistency was reached while Fried Dessert as the name suggested, was fried. Baking can lessen the amount of moisture in the product, thus making the product last longer.

Marketability

In terms of marketability all the four products were marketable. The products were displayed in the school cafeteria of two nearby high schools in the City of Tagbilaran City, Bohol and also in the university cafeteria of Bohol Island State University. It was found out that the products were sold out in the first three days of the week in one month of display. Atis Fried Dessert was saleable while hot, Calamay, Butter Scotch, and Boat Tart on the other hand were not only eaten as snack item in the cafeteria but were bought as a “pasalubong” for loved ones at home. It can be deduced that these Atis Desserts were all marketable.

CONCLUSION

Based on the findings, it can be concluded that the Atis dessert are all acceptable. These can be a good part of one’s meal. These products can be a source of income of the people in rural community because the ingredients are available in the locality, the tools and utensils are present in ones kitchen and the procedure of preparing the products are easy to follow. Although Atis Butter Scotch and Boat Tart used oven, these products can be baked in a clay oven which are manufactured in local community, thus it is still very much feasible for the rural community to produce these products.

RECOMMENDATION

It is recommended that Atis products be introduced to the rural community through the extension function of the university so that these can be used by them as another source of income. The university may conduct training about the preparation of these products from Atis so that they will be encouraged to produce and sell their products. Farmers should also be informed about the utilization of Atis as Desserts so that they will be motivated to plant more Atis trees in larger scale thus promoting the use of Atis and thereby excluding this fruit from the list of promising but forgotten fruits.

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