



DEVELOPMENT AND ACCEPTABILITY OF LESSER YAM (ELOS) DESSERTS

Nieves M. Alcayde

Capiz State University, Roxas City, Capiz, Philippines

Abstract: Dessert is the last course of a meal and this study aimed to develop Elos desserts and determine their acceptability. The dessert products formulated were Butchi, Pastillas, and Bibingka and were evaluated as to sensory qualities in terms of appearance, aroma, taste, and texture. The level of their acceptability was also tested using the same qualities. Significant differences in the treatments were determined for both the sensory qualities and acceptability.

The study was a developmental-experimental research that used the Completely Randomized Design (CRD) with two (2) treatments in three replications. The sensory qualities of the desserts were evaluated by 10 semi-trained panellists who were food technology teachers at Capiz State University while the final product was evaluated by 100 consumers using the Nine Point Hedonic Scale. The statistical tools used were the mean, and the Analysis of Variance One Way (ANOVA) which was set at 0.01 alpha level.

The findings of the study revealed that both treatments (Treatment A with 25 grams of Elos and Treatment B 50 grams of Elos) of Elos Butchi were extremely appealing in appearance, extremely pleasant in aroma, extremely delicious in taste and extremely crispy and chewy in texture with Treatment A showing the same mean in Treatment B. For the Elos Pastillas, both treatments were extremely appealing, extremely pleasant, extremely delicious and extremely soft and creamy. The Elos Bibingka were extremely appealing, extremely pleasant, extremely delicious and extremely soft and spongy in both treatments.

The three (3) Elos desserts were all liked extremely in their acceptability with product B (Pastillas) getting the highest result in all quality attributes. There were no significant differences in the sensory qualities of the Elos in making desserts considering the two treatments in terms of appearance, aroma, taste, and texture. There was no significant difference in the consumers' acceptability of Elos desserts considering the sensory qualities.

Elos Butchi and Elos Pastillas can stay up to 3 days at room temperature and seven days at chilling temperature. Elos Bibingka can stay for two (2) days at room temperature and five (5) days at chilling temperature.

The Elos Pastillas was safe for human consumption based on the results of microbial analysis of the product and based on the BFAD standard for microorganism test for products belonging to sugar confectionaries.

Keywords: Elos (Lesser Yam), Dessert, Development and Acceptability

I. INTRODUCTION

Food is life. Food is essential to everyone's existence. That is why many people are innovating and developing different kinds of food to meet their needs and satisfaction and to provide nutrients in the body to be physically fit all the time. During the time of the pandemic, everyone had a hard time because of the coronavirus. Those challenges can affect everyone physically and mentally. It is hard to keep the same routine even in preparing food because of limited actions due to the health protocol implemented by the government to avoid the spread of the virus. This situation has led many to find remedies to survive every day, especially in preparing food for family consumption.

During the Japanese colonization in the Philippines, some Filipinos stayed in the forests, caves, and other similar areas in order to hide from the Japanese soldiers. These Filipinos survived by eating raw and other foods available in their surroundings as their staple food and Elos or lesser yam is one of them. It can be cooked as a dish like ginataan with dried shrimp and can also be boiled and eaten like potatoes.

Elos or lesser yam is an indigenous vegetable that is part of Filipino food preparations. They are low-cost and nutritious options in the Filipino food basket. For these reasons, using Elos tuber as a good source of carbohydrates can be used in preparing dishes and will serve well for a highly sustainable strategy.



During the Japanese occupation, Elos, lesser yam, or *Dioscorea esculenta* was used as food.

Steven Witherly, a food scientist, said that people's appetite fades after they eat too much of the same type of food. A dessert course tricks the brain into wanting more food. It is said that as people eat the savory course, they rapidly reduce their hunger pangs and become full, and the pleasure of the first course has passed (savory and hot). But as they indulge again with a new set of foods (sweet and cold), their appetite re-energizes and they indulge in the pleasures of eating once again (Witherly, 2007).

The word "dessert" emerged in the seventeenth century, and is derived from the French verb "*desservir*," meaning "to clear the table" in English. Etiquette dictated that napkins and tablecloths be changed before the final course, which at the time was a delicate fruit course. In a courtly context, the course itself was known as "*le fruit*," but the bourgeois renamed it "dessert." After the French Revolution, the aristocratic "fruit" was fully replaced by "dessert." (Gershon, 2019).

Filipinos love sweet pastries, and with every meal, there is usually a lovely dessert of fruit, pudding, or cake. Elos can be a substitute for making dessert which is always present at the table during meals. Their presence makes people feel satisfied after a meal.

Using Elos in making dessert can be a big help in utilizing this wild tuber vegetable in the locality. This can be an answer to the country's economic crisis, particularly in the production of desserts and the continuously increasing price in the market which makes use of home-grown plant sources. Unemployed people who have no work, specifically farmers and those living in the high land area, can acquire this idea from the result of this study. This study may also serve as an eye-opener not only for teachers, students, housewives, and consumers but also for business-minded individuals who want to acquire knowledge from this research. Also, it can also trigger the interest of entrepreneurs and manufacturers for product development and improvement. Thus, the study was conducted.

Objectives of the Study

Primarily, this experimental study was conducted to determine the acceptability of using Elos in making desserts. Likewise, the study sought to:

1. determine the sensory qualities of Elos desserts in terms of appearance, aroma, taste, and texture;
2. find out the general acceptability of the Elos desserts;
3. find out if there is a significant difference in the sensory qualities of Elos desserts in terms of appearance, aroma, taste and texture;
4. find out if there is a significant difference in the general acceptability of the Elos desserts;
5. determine the shelf-life of the best Elos dessert in terms of room and chilling temperature; and,
6. submit the best product for microbial analysis.

Hypotheses

The following hypotheses were tested in the study:

1. There is no significant difference in the sensory qualities of the Elos desserts in terms of appearance, aroma, taste, and texture considering the different treatments.
2. There is no significant difference in the general acceptability of the Elos desserts considering the different treatments.

II. METHODOLOGY

The method used in this study was the developmental-experimental method of research. Developmental research is a systemic study of designing, developing, and evaluating instructional programs, processes, and products that must meet the criteria of internal consistency and effectiveness (Ibrahim, January 2016). In the developmental research, the products developed were the different desserts from Elos which had two (2) treatments each.

The experimental method involves the manipulation of variables to establish cause-and-effect relationships (McLeod, published 2012). The experimental method was used to investigate the right proportions of Elos in making desserts.

III. EXPERIMENTAL DESIGN

The experimental design used in the study was the completely randomized design (CRD). The experimentation was carried out with three (3) products: Product A - Elos was used as filling in making Buchi, Product B - Elos was used in

making Pastillas, and, Product C - Elos was used in making Bibingka. Samples for evaluation were coded and score card were utilized for randomization. Product formulations were done before the conduct of the product for evaluation in three trials which were replicated three (3) times.

The process was to test their appearance, aroma, taste, and texture as well as their general acceptability.

IV. MATERIALS, TOOLS AND EQUIPMENT

The materials, tools, and equipment used in this study were a working table, 6 pcs of the medium mixing bowl, medium stainless strainer, wire wrist, spatula, wooden ladle, 7 x 5 x 2 inches aluminium catering pan, stove, steamer, frying pan, one set measuring cup, one set measuring spoon, digital weighing scale, one (1) dozen of small bowls, kitchen knife, and fork.

V. INGREDIENTS OF THE STUDY

The ingredients used in the conduct of the study were Elos root, glutinous rice flour, white sugar, cooking oil, sesame seeds, condensed milk, coconut milk, peanuts, powdered milk, skimmed milk, coconut meat, butter, eggs, and cheese.

VI. EXPERIMENTAL TREATMENTS

The experiment was carried out with three (3) products as follows: Product A - Elos was used as filling in making Buchi, Product B - Elos was used in making Pastillas, and Product C - Elos was used in making Bibingka.

The filling ingredients used in the Elos Buchi were 100 grams of mashed Elos, 100 ml of coconut milk, 50 ml of condensed milk, and 10 grams of crushed peanuts.

Table 1. Product Formulation, Ingredients, and Proportion per trial for Sensory Evaluation.

Ingredients	Treatment A (Buchi)	Treatment B (Buchi)
Boiled Elos (Mashed)	25g	50g
Glutinous Rice Flour	50g	50g
Vegetable Oil	15 ml	15 ml
Water	20 ml	20 ml
White sugar	20g	20g
Elos Filling		
Boiled Elos (Mashed)Coconut	50g 50 ml	50g 50 ml
Milk Condensed Milk Crushed	25 ml5g	25 ml5g
Peanuts	Treatment A (Pastillas)	Treatment B (Pastillas)
Boiled Elos (Mashed)Skimmed	25g50g25g15g	50g50g25g15g
Milk Powdered Milk White	Treatment A (Bibingka)	Treatment B (Bibingka)
sugar	25g 50g 100 ml	50g 50g 100 ml
	1 pc.	1 pc.20ml20g
Boiled Elos (Mashed)Glutinous	20 ml20g	50 ml
Rice Flour Coconut Milk	50 ml	
Egg (Large) Melted Butter		
Coconut Meat		
Condensed Milk		

VII. EXPERIMENTAL PROCEDURES

The products developed in the study were desserts made from Elos. In preparing the different products and treatments, the researcher gathered and prepared all the ingredients.

**Step 1. Preparing Raw Materials****A. Preparation of Elos**

The Elos were gathered and prepared. Then, it was washed thoroughly using running water. The Elos were then peeled carefully and washed again using running water to remove the resin (a sticky substance) to eliminate itchiness. The Elos was sliced roughly into half-inch sections, placed in the steamer, and steamed for 40 to 45 minutes until cooked. The Elos was then removed from the steamer and let cool for a few minutes. Then, using the fork, it was mashed and set aside for later use.

B. Preparation of Elos Filling

All ingredients were gathered and measured accurately. The peanuts were crushed into tiny pieces. In a mixing bowl, the mashed Elos, coconut milk, condensed milk and peanuts were combined and mixed. Then the mixture was cooked until it thickened and was set aside for later use.

Step 2. Procedure in Making Elos Buchi

In a mixing bowl, the glutinous rice, mashed Elos, white sugar, vegetable oil and water were combined and mixed to form a dough. Then, the dough was steamed for about 10 minutes and was let cool. When the Buchi dough has cooled down, it was formed into small ball pieces with a hollow spot in the center. This was done by pressing the center of the dough. Using a measuring spoon, the Elos filling was scooped and stuffed in the Buchi dough. Then, the dough was sealed completely and rolled once until round shape was formed. The Buchi balls were rolled in the sesame seeds and was left for a while. The oil was heated until the desired deep frying temperature was attained, then the Buchi balls were fried until golden brown. The fried Buchi balls were removed from oil and drained to remove excess oil.

Step 3. Procedure in Making Elos Pastillas

In the preparation of the Elos Pastillas, all ingredients were first gathered and measured accurately. Then the mashed Elos, white sugar, skimmed milk, and powdered milk were combined and mixed thoroughly for about 10 minutes until firm in a mixing bowl. With the use of a measuring spoon, the mixture was scooped and then shaped into balls using the hands. After it was formed, it was rolled or coated in white sugar. At this point Pastillas can be transferred to an airtight container for storage.

Step 4. Procedure in Making Elos Bibingka

All the ingredients were prepared and measured accurately. The glutinous rice, mashed Elos, coconut milk, egg, melted butter, coconut meat, condensed milk, and cheese were combined in a bowl and mixed thoroughly. Then it was set aside. The Banana was placed on the aluminum pan to completely cover the sides and the bottom. The mixture was then poured into the leaf-coated pan. The prepared mixture was then steamed for 30 minutes until cooked. After the allotted time, the pre-cooked Bibingka was removed from the steamer. Next, grated cheese was added to the pre-cooked Bibingka and baked for 10 minutes. Finally, the Elos Bibingka was removed from the air fryer and was let cool for a few minutes, then served.

VIII. COLLECTION OF DATA

The instrument used to gather the data was a Score Card for the sensory evaluation. The ten (10) semi-trained panellists evaluated the Buchi with Elos filling, Elos Pastillas, and Elos Bibingka in terms of appearance, aroma, taste, and texture. The sensory evaluation of the semi-trained panelists was done on the three trials or replications. On the other hand, the consumer's assessment of the product's acceptability was based on the final product composition.

A total of one hundred (100) consumers, including 7 TLE teachers, 60 cookery students in Grade 10 and Grade 12 from Jagnaya National High School, 13 children at Jagnaya, Jamindan, Capiz and 20 potential consumers in Jagnaya public market evaluated the acceptability of the products. After the evaluation of the product, the evaluation sheets were gathered, tallied, analyzed, and interpreted using the SPSS software with the help of a statistician. The mean was used to determine the sensory qualities of Elos dessert in terms of appearance, aroma, taste, and texture and its general acceptability as a whole. ANOVA was used to analyze and interpret the difference among the three treatments, set at 0.01 level of significance.

IX. RESULTS AND DISCUSSIONS

Sensory Qualities of Elos Desserts

Table 3 reflects the sensory qualities of the three (3) products of Elos desserts as evaluated by ten (10) semi-trained panelists in terms of appearance, aroma, taste, and texture.

For the Elos Buchi, in terms of appearance, results revealed that Treatment A with 25 grams of Elos and Treatment B with 50 grams of Elos were both found to be “Extremely Appealing” with a mean of 8.70 respectively. This means that the amount of Elos used in making Buchi would result in the same appearance. In terms of aroma, Treatment A with 25grams of Elos and Treatment B with 50 grams of Elos were both “Extremely Pleasant” with a mean of 8.70. This implies that the aroma of the two treatments was the same regardless of the amount of Elos used in making Buchi. Further, the taste of the product in Treatment B was found “Extremely Delicious” with a mean score of 8.70, and Treatment A with a mean of 8.50 was described as “Extremely Delicious” as well. As to the texture of the Buchi, participants found Treatment A with a mean of 8.60 and Treatment B with a mean of 8.40, “Extremely Crispy and Chewy”.

The findings of the study support Galindo’s (2022) statement that: “Apali can be processed into various products including cue, boiled, sweetened, jams, candies, and vegetable mixed or stewed with meat. Due to its potato-like characteristics, Apali can also be sliced or diced and boiled or fried like chips or fries.” Dubbed as the “Apali Pinoy fries” it was found to taste very similar to that of French fries in terms of texture and appearance. The taste was found to be acceptable among those who have tried it during trade fairs and exhibits. The project enabled DA-RFO 11 to produce Apali flour and various Apali-flour-based products including cookies, crinkles, and munchkins.

Table 3. Sensory Qualities of Elos Desserts as evaluated by Semi-Trained Panelists.

SENSOR Y QUALITY	BUCHI				PASTILLAS				BIBINGKA			
	TreatmentA		TreatmentB		Treatment A		Treatment B		Treatment A		Treatment B	
	Mean	AD	Mean	AD	Mean	AD	Mean	AD	Mean	AD	Mean	AD
Appearance	8.70	EA	8.70	EA	8.80	EA	8.60	EA	8.80	EA	8.80	EA
Aroma	8.70	EP	8.70	EP	8.60	EP	8.60	EP	8.80	EP	8.50	EP
Taste	8.50	ED	8.70	ED	8.80	ED	8.30	ED	8.80	ED	8.30	ED
Texture	8.60	ECC	8.40	ECC	8.60	ESC	8.20	ESC	8.80	ESS	8.80	ESS

Legends

- : AD –Adjectival Description
- : EP- Extremely Pleasant
- : ECC – Extremely Crispy and Chewy
- : EA - Extremely Appealing
- : ED-Extremely Delicious
- : ESC- Extremely Soft and Creamy
- : ESS-Extremely Soft and Spongy

General Acceptability of the Elos Desserts

Table 4 shows the general acceptability of the Elos desserts in terms of appearance, aroma, taste, and texture as rated by the 100 consumers who are teachers, students, and potential consumers (housewives, vendors, and food enthusiasts).

Generally, the three products were “Liked Extremely” in terms of appearance: Pastillas (M=8.89), Bibingka (M=8.55), and Buchi (M=8.47). In terms of aroma, all products were “Liked Extremely” with the following means: Pastillas - 8.59, Buchi - 8.21, and Bibingka - 8.16.

Likewise, in terms of taste, all three products were “Liked Extremely” as shown by the following means: 8.99 for Pastillas; 8.91 for Bibingka; and 8.75 for Buchi. Moreover, in terms of texture, all three products were also “Liked Extremely”: Pastillas (M=8.88), Bibingka (M= 8.24), and Buchi (M= 8.20).

Table 4. General Acceptability of Elos Desserts in terms of Sensory Qualities evaluated by Consumers.

SENSORY QUALITY	PRODUCT 1 BUCHI		PRODUCT 2 PASTILLAS		PRODUCT 3 BIBINGKA	
	MEAN	QD	MEAN	QD	MEAN	QD
Appearance	8.47	LE	8.89	LE	8.55	LE
Aroma	8.21	LE	8.59	LE	8.16	LE
Taste	8.75	LE	8.99	LE	8.91	LE
Texture	8.20	LE	8.88	LE	8.24	LE
General Acceptability	8.41	LE	8.84	LE	8.47	LE

Legend: Scale of Means

8.12 – 9.00
 7.23 – 8.11
 6.34 – 7.22

Qualitative Description

Liked Extremely
 Liked Very Much
 Liked Moderately

The consumers generally preferred Pastillas considering that it has garnered the highest mean in all sensory qualities. It was followed by Bibingka, then by Buchi.

Difference in the Sensory Qualities of Elos Desserts

Table 5 revealed that there was no significant difference in the appearance, aroma, taste, and texture of Buchi considering the two treatments as rated by semi-trained panelists (F-value= .000, p-value=1.000>.01), (F-value= .481, p-value=1.000>.01), (F-value= .481, p-value=1.000>.01), (F-value= .070, p-value=0.795>.01). Therefore, the null hypothesis stating that there is no significant difference in the appearance, aroma, taste, and texture of the two treatments of Elos Buchi was accepted. This implies that the Buchi’s appearance, aroma, taste, and texture remained the same despite the variation in the amount of Elos used. Generally, the best proportion of mashed Elos over glutinous rice flour in every treatment is 25 grams to 100 grams of glutinous rice flour, which is the formulation of Treatment A.

Table 5. Difference in the sensory qualities of Elos Buchi

SOURCES OF VARIANCE	df	Mean Difference	t- VALUE	p-VALUE	REMARKS
Appearance	18	.00000	.000	1.000	ns.
	18.000	.00000			
	18	.00000			
Aroma	18.000	.00000	.481	1.000	ns.
	18	-.20000			
	17.961	-.20000			
Taste	18	.20000	.481	.497	ns.
	18.000	.20000			
	18	.00000			
Texture	18.000	.00000	.070	.795	ns.

Legend : p-value set at .01 alpha level of significant

Table 6 revealed that there was no significant difference in the appearance, aroma, taste, and texture of Pastillas considering the two treatments as rated by semi-trained panelists (t-value= 2.817, p-value=.111>.01), (t-value= .424, p-value=.523>.01), (t-value= 7.318, p-value=.014>.01), (t-value= 1.440, p-value=.246>.01). Therefore, the null hypothesis of the study that no significant difference exists in the appearance, aroma, taste, and texture of the two treatments of Elos Pastillas candy was accepted. This implies that the Pastillas' appearance, aroma, taste, and texture remained the same even if there was variation in the amount of Elos used.

Table 6. Difference in the sensory qualities of Elos Pastillas

SOURCES OF VARIANCE	df	Mean Difference	t-value	p- VALUE	REMARKS
Appearance	18	.20000	2.817	.111	ns.
		14.781 .20000			
Aroma	18	.00000	.424	.523	ns.
		16.567 .00000			
Taste	18	.50000	7.318	.014	ns.
		13.417 .50000			
Texture	18	.40000	1.440	.246	ns.
		15.517 .40000			
		.20000			

Legend: p-value set at .01 alpha level of significant

Table 7 revealed that there was no significant difference in the appearance, aroma, taste, and texture of Elos Bibingka considering the two treatments as rated by semi-trained panelists (t-value= .000, p-value= 1.000>.01), (t-value= 4.780, p-value=.042>.01), (t-value= 7.318, p-value=.014>.01), (t-value= 7.318, p-value=.014>.01).

Therefore, the null hypothesis of the study that no significant difference exists in the appearance, aroma, taste, and texture of the two treatments of Elos Bibingka was accepted.

This implies that the appearance, aroma, taste, and texture of the Elos Bibingka remained the same even if the amount of Elos used varied.

Table 7. Difference in the sensory qualities of Elos Bibingka

SOURCES OF VARIANCE	df	Mean Difference	t-VALUE	p-VALUE	REMARKS
Appearance	18	.00000	.000	1.000	ns.
		18.000 .00000			
Aroma	18	.30000	4.780	.042	ns.
		14.682 .30000			
		.50000			

	13.417	.50000		
Taste	18	.50000	7.318 .014	ns.
	13.417	.50000		
	18	.00000		
Texture	18.000	.00000	7.318 .014	ns.

Legend: p-value set at .01 alpha level of significant

Difference in the General Acceptability of Three Elos Dessert Products.

Table 8 shows the test of difference in the consumers’ general acceptability rating of the three Elos desserts which are Buchi, Pastillas, and Bibingka.

Data revealed that the consumers’ acceptability of the appearance of the Elos desserts significantly differed (F-ratio=18.591, p-value=.000<.01) in favor of Pastillas. This result implies that consumers preferred Pastillas over Buchi and Bibingka with regard to the appearance of the desserts.

This result rejects the null hypothesis that there is no significant difference in the general acceptability of the Elos desserts. Results likewise showed that consumers’ acceptability of the aroma of the Elos desserts significantly differed (F-ratio=30.292, p-value=.000<.01) in favor of Pastillas. Thus, the null hypothesis that consumers’ acceptability of the aroma of the products do not differ is hereby rejected.

Moreover, there was no significant difference in the taste of the Elos desserts as evaluated by the consumers. (F- ratio=4.351, p-value=.014>.01). This result accepts the null hypothesis that consumers’ acceptability of the taste of Elosin making desserts significantly did not differ. This implies that consumers’ acceptability of the desserts was similar whether it was Buchi, Pastillas, or Bibingka.

Table 8. Difference in the General Acceptability of Three Elos Desserts.

Sensory Qualities	Sum of Squares	df	Mean Square	F ratio	P value	Remarks
Appearance	9.947	2	4.973	18.591	.000	s.
	79.450	297	.268			
	89.397	299				
Aroma	11.060	2	5.530	30.292	.000	s.
	54.220	297	.183			
	65.280	299				
Taste	2.987	2	1.493	4.351	.014	ns.
	101.930	297	.343			
	104.917	299				
Texture	29.120	2	14.560	92.400	.000	s.
	46.800	297	.158			
	75.920	299				
General Acceptability	10.275	2	5.138	106.436	.000	s.
	14.336	297	.048			
	24.612	299				

Legend : p-value > .01 alpha, not significant, p-value<.01, significant

However, the consumers’ acceptability of the texture of the desserts significantly differed (F-ratio=92.400, p-value=.000<.01). This means that the null hypothesis is rejected and the alternative hypothesis was accepted that there was a significant difference in the texture of the Elos desserts, in favor of Pastillas.

Furthermore, when it comes to the overall results of the consumers' acceptability, the three Elos dessert products were found to be significantly different from one another as shown by the results (F-ratio=106.436, p-value=.000<.01) in favor of Pastillas.

Shelf-life of the Elos Desserts at Room and Chilling Temperature

The observed shelf-life of Elos Buchi sealed in a container when stored in room and chilling temperature away from water and sunlight. The observation of shelf-life was done every day to examine if the product was of good quality or if there were changes in the Elos Buchi. The Buchi stayed for only three (3) days at room temperature because on the fourth day, Buchi had changes like mold formation and staleness.

The shelf-life of Buchi at chilling temperature was seven (7) days, that is, Buchi showed no changes in its sensory qualities. However, on the eighth day, there were mold formations and staleness of the Elos Buchi.

The observed shelf-life of Elos Pastillas sealed in a container when stored at room and chilling temperature and away from water and sunlight. The observation of the shelf-life was done every day to examine if the Pastillas were of good quality or if there were changes in the Elos Pastillas. The Pastillas stayed for only three (3) days at room temperature.

The shelf-life of Pastillas at chilling temperature was seven (7) days. Mold formation and staleness were observed on the 8th day of the Pastillas.

The observed shelf-life of Elos Bibingka sealed in an aluminum pan when stored at room and chilling temperature and away from water and sunlight. The observation of the shelf-life was done every day to examine if the Bibingka was still of good quality or if there were changes in the Elos Bibingka. The Bibingka stayed for only two (2) days at room temperature.

Furthermore, the shelf-life of Elos Bibingka at chilling temperature is five (5) days. On the sixth day, there were mold formation and staleness in the Bibingka.

Microbial Analysis of Elos Pastillas

Table 8 showed the microbial report analysis of Elos Pastillas samples conducted by the DOST Regional Standard and Testing Laboratory, Iloilo City. Test Service Request No. R6-032023-MIC-0225-0390 was submitted dated March 27, 2023 and was analyzed from March 27, 2023 to April 03, 2023 as attached in Appendix M.

The Elos Pastillas at 200grams per pack were subjected to Aerobic Plate Count using Pour plate method, 35°C, 48 hrs., PCA, USFDA BAM Online (2001), Coliform Count using Multiple Tube Fermentation Technique, USFDA BAM Online (2001), and Mold and Yeast Count using Pour plate method, 25°C, 5-7 days., DRBCA, USFDA BAM Online (2001).

Table 8. Microbial Analysis of Elos Pastillas.

Sample Description	Parameter	DOST	FDA Standards of Sugar Confectionaries	
			m	M
Elos Pastillas, 200g MFD:03/27/2023 EXP: 04/04/2023)	Aerobic Plate Count	76000 cfu/g sample	10 ⁴	10 ⁶
	Molds and Yeast Count	5200* cfu/g sample (estimated)	10	10 ²
	Total Coliform	23 MPN/g sample	1.8	10 ²

Legend: m –acceptable level of microorganism determined by a specified method: values are generally based on levels that are achievable under GMP

M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates a potential health hazard or imminent spoilage.

X. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The following conclusions are formulated based on the findings of the study

Elos can be utilized as a main ingredient in making desserts such as Buchi, Pastillas, and Bibingka. Pastillas from Elos were preferred by the consumers followed by Bibingka and the last was Buchi.

The sensory qualities of the Elos desserts were the same, despite the variation in the amount of mashed Elos used. The Elos desserts were all liked extremely by the consumers.

Elos Buchi and Elos Pastillas can stay up to 3 days at room temperature and seven days at chilling temperature. Elos Bibingka can stay for two (2) days at room temperature and five (5) days at chilling temperature.

Elos Pastillas is safe for human consumption based on the results of microbial analysis of the product and based on the BFAD standard for microorganism test for products belonging to the sugar confectionaries.

Recommendations

Based on the conclusions, the following recommendations were formulated:

Elos may be used in making Buchi, Pastillas, and Bibingka.

Desserts with 25g of mashed Elos may be prepared for quality desserts that are appealing and delicious.

The product can be exhibited in the university during food fairs because its originality can be an example and basis for other researchers who plan to conduct studies along the same line. The Elos Buchi, Pastillas and Bibingka may be kept refrigerated and must be properly sealed so that it can be brought/transported to other places or in food display centers.

It is also recommended to submit the Elos dessert products for proximate analysis and nutrient content for possible commercialization.

Other researchers may try other variants/factors not covered in the current study.

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