

Acceptability of Palawan Sasema as a Local Delicacy

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Abstract — Sasema, which is served during parties and other gatherings, is a locally known delicacy in Guiuan, Eastern Samar Philippines. It belongs to the dry food category, made from wheat flour and wrapped like a candy. It is produced and patronized by local consumers.

This study focused on the development of Sasema using the Palawan flour as substitute to the all-purpose flour. Specifically, the study worked along the following objectives: 1) to evaluate the quality characteristics of the Palawan Sasema; 2) to determine the acceptability level of the product; and 3) to determine the significant difference between Wheat flour Sasema and Palawan Sasema in terms of quality characteristics and acceptability.

Findings of the study revealed that Treatment 1 (100% Wheat flour Sasema) and Treatment 2 (75/25 Palawan/Wheat flour Sasema) were the most accepted Sasema preparations. This was followed by Treatment 3 (50/50 Palawan/Wheat flour Sasema) and Treatment 4 (25/75 percent Palawan Wheat flour Sasema) was the least accepted of the four Sasema preparations.

In view of the findings of this study, the following recommendations are offered: 1) shelf life of the Palawan Sasema should be determined using the same product sample; 2) the food product may be subjected for food content analysis; 3) packaging should be improved for product marketability; 4) follow-up study may be conducted on mass production including packaging and marketing; and 5) further study may be conducted using artificial sugar and honey syrup instead of Karo and commercial sugar for health-conscious people.

Keywords — Palawansasema, Sasema, Palawan Flour, Wheat Flour, Swamp Taro, *Cyrtospermachamissonis*.

I. INTRODUCTION

Food product development is one of the priority areas in the research agenda of ESSU Guiuan Campus in line with the government program on food security and its regional and national thrusts and priorities which is “livelihood generation”. With Guiuan known for its abundance in root crop that are made into desserts and other delicacies giving livelihood opportunities to the rural folks the researchers were challenged to come up with a product utilizing swamp taro flour as substitute to the commercially available all-purpose flour in making “Sasema”.

Sasema is a locally known delicacy that is often served during parties and other special occasions. Made of commercially available wheat flour, easily prepared and cheaper than most desserts available in the market it belongs to the dry food category, wrapped like a candy, and can be eaten with bare hands. As one of the desserts with many varieties.

Sasema variety is subject to further study and development for purposes of household consumption and

commercialization. These observations of sasema encouraged the researchers to prepare sasema using palawan flour to an organoleptic testing and acceptability evaluation.

Swamp taro, which is locally known as “Palawan” is a variety of *Cyrtospermachamissonis* found in swamp areas in the municipality of Guiuan, geographically around fifteen percent (15%) of its total land area [2]. The edible portion of the Palawan contains carbohydrates, fats, fibers and other nutrients and it is considered to be a high-energy giving food [2]. For the low-income families particularly in the rural areas, Palawan is boiled, served and eaten as substitute for rice in meals. However, there are existing local recipes made out of palawan root crop like patties, catsup, suman or sinaging, jalea de palawan, snack chips and “lupaknapalawan”. This root crop can also be made into flour which is the basic ingredient of sasema in this study.

II. METHODOLOGY

A number of materials and methods were employed in the different phases of operation in the conduct of the study. The following ingredients and materials were used in this study: palawan flour, all-purpose flour, eggs, corn syrup, sugar, water, cooking oil, baking powder, colored cellophane and cellophane for packing. Equipment and utensils were also necessary. The following utensils were used in the preparation of palawan Sasema: measuring cups and spoons, grinder, ladles, vibro sifter, knives, slicer, mixing bowl colander, noodle presser, baking pans, aluminum tray, cutting board, frying pan and rolling Pin.

These tools and utensils were gathered and cleaned in the kitchen of the HRRM laboratory room before the experimentation was started. The researchers also used cooking outfit.

The processing of palawan flour was done using the following procedure: wash the uncooked palawan and scrape the outer covering using knife; cut the clean raw palawan into four to facilitate easy slicing; slice the raw palawan thinly to have speedy drying; arrange the slices on aluminum trays; have it air dried for 1-2 days or until it is well dried; pound the dried palawan; sift the flour using clean sifter; separate the fine flour and the coarse one; repeat pounding the coarse flour until fine; place the fine palawan flour using dry containers with cover.

The following procedures were followed in the preparation of palawansasema: measure the ingredients accurately; combine eggs and palawan flour to make dough; flatten the dough and slice them into small pieces; fry the sliced dough in a pan with cooking oil until the

color becomes light brown; place the fried sasema in a strainer to remove the excess oil; prepare syrup, add karo and pour this to the fried sasema; flatten them in a baking pan and slice them in a uniform size; wrap the sasema in colored plastic cellophane.

Acceptability of a product must have bases for comparison. Hence, the researchers prepared three more sasema product using different proportions of palawan flour and wheat flour. The following treatments were used:

Treatment 1 – Sasema made of 100% wheat flour;

Treatment 2 – Sasema made of 75% palawan flour and 25% wheat flour;

Treatment 3 – Sasema made of 50% palawan flour and 50% wheat flour; and

Treatment 4 – Sasema made of 25% palawan flour and 75% wheat flour.

To obtain a reliable result in the evaluation of the sasema samples, sensory evaluation or organoleptic test and acceptability test were used [1]. The acceptability test was done by the respondents to determine the degree of acceptance of the products.

There were 90 respondents in the consumer testing who were randomly chosen from the adults, college students in ESSU Guiuan Campus and high school and elementary pupils in Taytay Integrated School.

The data were analyzed with the use of appropriate measurement scale and statistical tool. The quality attributes which include color, taste, crispness, crumbliness; texture and aroma were evaluated with the use of a sensory system scaled from 1 – 5.

The data were tabulated and the mean preferences and percentages were determined. The analysis of variance (ANOVA) and the complete randomized design (CRD) were used to determine the significant differences among the treatments [2].

III. RESULTS AND DISCUSSION

The results of the study conducted are presented in tabular form with the corresponding textual interpretation.

Table 1 presents the acceptability of the quality characteristics of the four Sasema samples as rated by the respondents.

For the color of the four Sasema samples, Treatment 1 (wheat flour), Treatment 2 (75/25 Palawan/wheat flour mixture) and Treatment 3 (50/50 Palawan/wheat flour mixture) were rated “very good”. As to taste of the Sasemasamples, Treatment 1 (Wheat flour), Treatment 2 (75/25 Palawan/wheat flour mixture) and Treatment 3 (50/50 Palawan/wheat flour mixture) were rated “very good” while Treatment 4 was only rated “good”.

Table 1. Acceptability on the Quality Characteristics of Sasema Samples

Quality Attribute	Treatment	Replication		Mean	Quality Description
		1	2		
Color	1	4.4	4.5	4.45	Very Good
	2	4.2	4.4	4.30	Very Good
	3	3.8	4.0	3.90	Very Good
	4	3.4	3.5	3.10	Good
Taste	1	4.1	4.3	4.20	Very Good
	2	4.0	4.0	4.00	Very Good
	3	3.9	3.9	3.90	Very Good
	4	3.4	3.5	3.45	Good
Crispness	1	4.0	4.0	4.00	Very Good
	2	3.9	4.1	4.15	Very Good
	3	3.1	3.2	3.15	Good
	4	3.0	3.0	3.00	Good
Crumbliness	1	3.9	4.0	3.95	Very Good
	2	3.8	4.0	3.90	Very Good
	3	3.4	3.6	3.50	Very Good
	4	3.4	3.5	3.45	Good
Texture	1	4.1	4.1	4.10	Very Good
	2	4.0	4.1	4.05	Very Good
	3	3.4	3.5	3.45	Good
	4	3.2	3.3	3.25	Good
Aroma	1	4.2	4.2	4.20	Very Good
	2	3.9	4.1	4.00	Very Good
	3	3.2	3.3	3.25	Good
	4	3.0	3.2	3.10	Good

For crispness, texture and aroma of the Sasema samples, Treatment 1 and Treatment 2 were also rated “very good”. Treatments 3 and 4 were only rated “good”.

On the crumbliness of the Sasema sample, Treatment 1 (wheat flour), Treatment 2 (75/25 Palawan/wheat flour mixture) and Treatment 3 (50/50 Palawan/wheat flour mixture) were rated “very good”, while Treatment 4 was only rated “good”.

Table 2. Color of the *Sasema* Samples

Treatment	Replication		Treatment Total	Treatment Mean*
	1	2		
1	4.4	4.5	8.9	4.45 ^a
2	4.2	4.4	8.6	4.30 ^a
3	3.8	4.0	7.8	3.90 ^b
4	3.4	3.5	6.9	3.45 ^c
Grand Total			32.20	
Grand Mean				4.02

LSD .05 = 0.28

Table 2 shows the mean scores on the color of the four *Sasema* samples. The color of the *Sasema* samples reveal that Treatment 1 got the highest mean score of 4.45, followed by Treatment 2 with a mean score of 4.30, Treatment 3 got a mean score of 3.90 and Treatment 4 has a mean score of 3.45. The grand mean score was 4.02 with a corresponding acceptability description of “very good”.

Analysis of variance for color on the different *Sasema* samples is presented in Table 2.1. It can be seen from the table that the computed F value of 40.0 is greater than the tabular value of 4.35 at 0.05 level of significance. This shows that the *Sasema* samples differ significantly in their color.

Comparison test revealed that Treatment 1 and Treatment 2 showed no significant difference but both differ significantly with Treatment 3 and Treatment 4. The data further reveal that Treatments 1 and 2 showed similar color but differ from the color of Treatment 3 and Treatment 4. The color of Treatment 3 also differs significantly with the color of Treatment 4.

Table 3 presents the mean score of the *Sasema* samples as to taste. The data show that Treatment 1 has a mean score of 4.20; Treatment 2 got a mean score of 4.00; Treatment 3 and Treatment 4 obtained a mean score of 3.90 and 3.45, respectively. The grand mean obtained was 3.89 and has an acceptability description of “very good.”

Analysis of variance as to taste of the different *Sasema* samples is reflected in Table 3.1. The table shows that the F value of 5.06 is greater than the tabular value of 4.35. This means that there is a significant difference on the taste of the different samples.

Comparison of Treatment means revealed that Treatment 1, Treatment 2 and 3 showed no significant differences with each other but they differ significantly with Treatment 4. This means further that Treatment 1, Treatment 2 and 3 showed similar taste but differ from the taste of Treatment 4.

Table 3.1 Analysis of Variance of Taste

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Value	Tabular Value (5%)
Treatment	3	121.50	40.50	5.06**	4.35
Error	4	0.03	0.0080		
Total	7	121.53			

** Highly Significant

Table 4. Crispness of the *Sasema* Samples

Treatment	Replication		Treatment Total	Treatment Mean*
	1	2		
1	4.0	4.0	8.0	4.00 ^a
2	3.9	4.1	8.0	4.15 ^a
3	3.1	3.2	6.3	3.10 ^b
4	3.0	3.0	6.0	3.00 ^b
Grand Total			28.3	
Grand Mean				3.54

LSD = 0.197 or 0.2

Table 4 reveals the mean scores of the four *Sasema* samples in terms of crispness. The data show that Treatment 1 and Treatment 2 both obtained a mean score of 4.00 while Treatment 3 and 4 got a mean score of 3.10 and 3.00 respectively. The grand mean obtained was 3.54, which has a corresponding acceptability of “very good.”

Analysis of variance as to crispness revealed that samples as presented in Table 4.1, the computed F value 116.00 is greater than the tabular value of 4.35. This indicates that there is a significant difference on the crispness of the four *Sasema* samples.

Comparison of Treatment revealed that pairing Treatment 2 and Treatment 1 showed no significant difference. Likewise, pairing Treatment 3 and Treatment 4 also showed no significant difference. However, Treatment 1 and Treatment 2 showed significant difference with Treatment 3 and Treatment 4. This means further that Treatment 1 and Treatment 2 showed similar crispness while Treatment 3 and Treatment 4 also showed similar crispness; but the crispness of Treatment 1 and Treatment 2 is different from the crispness of Treatment 3 and Treatment 4.

Table 4.1 Analysis of Variance of Crispness

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Value	Tabular Value (5%)
Treatment	3	1.74	.58	116.00**	4.35
Error	4	0.02	0.005		
Total	7	1.76			

**Highly Significant

Table 5. Crumbliness of the *Sasema* Samples

Treatment	Replication		Treatment Total	Treatment Mean*
	1	2		
1	3.9	4.0	7.9	3.95 ^a
2	3.8	4.0	7.8	3.90 ^a
3	3.4	3.6	7.0	3.50 ^b
4	3.4	3.5	6.9	3.45 ^b
Grand Total			29.60	
Grand Mean				3.70

LSD = 0.28

Table 6. Texture of the *Sasema* Samples

Treatment	Replication		Treatment Total	Treatment Mean*
	1	2		
1	4.1	4.1	8.2	4.10 ^a
2	4.0	4.1	8.1	4.05 ^a
3	3.4	3.5	6.9	3.45 ^b
4	3.2	3.3	6.5	3.25 ^b
Grand Total			29.70	
Grand Mean				3.71

LSD = 0.17

Table 6.1 Analysis of Variance of Texture

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Value	Tabular Value (5%)
Treatment	3	1.095	0.365	96.05**	4.35
Error	4	0.015	0.0038		
Total	7	1.110			

** Highly Significant

Table 5 presents the mean score of the *Sasema* samples to measure crumbliness. As shown in the table, Treatment 1 got a mean score of 3.95; Treatment 2 and Treatment 3 obtained a mean score of 3.90 and 3.50 respectively, while treatment 4 got a mean score of 3.45. The grand mean is 3.70 with a corresponding acceptability of “very good.”

Analysis of variance for crumbliness showed that the computed F value of 14.0 is greater than the tabular value of 4.35. This shows that the *Sasema* samples differ significant in its crumbliness. Comparison test revealed that pairing Treatment 1 and Treatment 2 showed no significant difference. Pairing Treatment 3 and Treatment 4, on the other hand, also showed no significant difference. However, Treatment 1 and Treatment 2 showed significant difference with Treatment 3 and Treatment 4. This means that Treatment 1 and Treatment 2 had similar crumbliness but the crumbliness of Treatment 1 and Treatment 2 was different from the crumbliness of Treatment 3 and Treatment 4.

Table 6 reflects the mean scores of the *Sasema* samples in terms of the texture. The samples showed that Treatment 1 got a mean score of 4.1; Treatment 4 obtained a mean score of 3.25. The grand mean obtained is 3.71 with a corresponding acceptability description of “like very much.”

Analysis of variance as regard to texture, which is presented in Table 6.1 revealed that the computed value of 96.05 is greater than the tabular value of 4.35. This indicates that there is significant difference in the texture of the samples.

Comparison test showed that pairing Treatment 1 and Treatment 2 revealed no significant difference with each other while Treatment 3 Treatment 4 showed significant difference. However, Treatment 1 and Treatment 2 showed significant difference in texture with Treatment 3

and Treatment 4. The data further revealed that Treatment 1 and Treatment 2 had similar texture.

Treatment 3 and Treatment 4 were not similar in their texture; but the texture of Treatment 1 and Treatment 2 differ significantly from the texture of Treatment 3 and Treatment 4.

Table 7. Aroma of the *Sasema* Samples

Treatment	Replication		Treatment Total	Treatment Mean*
	1	2		
1	4.2	4.2	8.4	4.20
2	3.9	4.1	8.0	4.00 ^a
3	3.2	3.3	6.5	3.25 ^b
4	3.0	3.2	6.2	3.10 ^b
Grand Total			29.10	
Grand Mean				4.64

LSD = 0.28

Shown in Table 7 are the mean scores of the *Sasema* samples in terms of the aroma. Treatment 1 shows a mean score of 4.20; Treatment 2 and Treatment 3 revealed a mean score of 4.00 and 3.25, respectively; while Treatment 4 got a mean score of 3.10. The grand mean obtained is 4.64 with a corresponding acceptability description of “very good.”

Analysis of variance as to aroma (presented in Table 7.1) revealed that the computed F value of 59.00 is greater than the Tabular value of 4.35. This indicates that there is significant difference on the aroma of the samples.

Comparison test showed that pairing Treatment 1 and Treatment 2 showed no significant difference. In like manner, pairing Treatment 3 and Treatment 4 also showed no significant difference. However, Treatment 1 and treatment 2 both showed significant difference in aroma with Treatment 3 and Treatment 4. This means that Treatment 1 and Treatment 2 had similar aroma and Treatment 3 and Treatment 4 also showed similar aroma; but the aroma of Treatment 1 and Treatment 2 had a super aroma than that of Treatment 3 and Treatment 4.

Table 7.1 Analysis of Variance of Aroma

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Value	Tabular Value (5%)
Treatment	3	1.78	0.59	59.00**	4.35
Error	4	0.04	0.01		
Total	7	1.82			

** Highly Significant

Presented in Table 8 is the acceptability percentage of the 90 respondents, which showed that Treatment 1 was rated by 70 or 77.78 percent of the respondents as “like very much”. For Treatment 2, 61 or 67.78 percent of the

respondents rated it as “like very much”; 22 or 24.44 percent rated it as “like moderately”.

Treatment 3 is rated “like moderately” by 45 or 50 percent of the respondents; 23 or 25.56 percent rated it as “like slightly”; while 22 or 24.44 percent rated it as “neither like nor dislike”.

For Treatment 4, 41 or 45.56 percent of the respondents rated it as “like moderately”; 5 or 5.56 percent rated it as “like slightly”; 18 or 20 percent of the respondents assessed it as “neither like nor dislike” while 26 or 28.89 percent rated it as “dislike slightly”

Table 8. Frequency of Respondents’ Preference Responses on *Sasema* Samples

Treatment	Preference Response	Frequency	Percentage
1 (100 Per cent Wheat Flour <i>Sasema</i>)	Like Extremely	0	0
	Like Very Much	70	77.78
	Like Moderately	13	14.44
	Like slightly	7	7.78
	Neither Like nor Dislike	0	0
	Dislike Slightly	0	0
	Dislike Moderately	0	0
	Dislike Very Much	0	0
	Dislike Extremely	0	0
Total		90	100
2 (75/25 Percent Palawan Flour/Wheat Flour <i>Sasema</i>)	Like Extremely	0	0
	Like Very Much	61	67.78
	Like Moderately	22	24.44
	Like slightly	7	7.78
	Neither Like nor Dislike	0	0
	Dislike Slightly	0	0
	Dislike Moderately	0	0
	Dislike Very Much	0	0
Total		90	100
3 (50/50 Palawan/Wheat Flour <i>Sasema</i>)	Like Extremely	0	0
	Like Very Much	0	0
	Like Moderately	45	50.00
	Like slightly	23	25.56
	Neither Like nor Dislike	22	24.44
	Dislike Slightly	0	0
	Dislike Moderately	0	0
	Dislike Very Much	0	0
	Dislike Extremely	0	0
Total		90	100
4 (25/75 Palawan Flour/Wheat Flour <i>Sasema</i>)	Like Extremely	0	0
	Like Very Much	0	0
	Like Moderately	41	45.56
	Like slightly	5	5.56
	Neither Like nor Dislike	18	20.00
	Dislike Slightly	26	28.89
	Dislike Moderately	0	0
Total	Dislike Very Much	0	0
	Dislike Extremely	0	0
	Total	90	100

Table 9 reveals the acceptability of the *Sasema* samples as rated by the respondents. It revealed that Treatment 1 got

the highest mean value of 8.05, followed closely by Treatment 2 with a mean value of 8.00. Treatment 3 got a mean value of 7.45 while Treatment 4 got a mean value of 7.15.

Analysis of variance on the acceptability showed that the computed F value of 13.10 is greater than the tabular value of 4.35. This means that there is significant difference among the four samples.

Comparison of test treatment means using the LSD test showed that Treatment 1 and Treatment 2 did not differ significantly with each other, but they differ significantly with Treatment 3 and Treatment 4. Treatment 3 and Treatment 4 did not differ significantly with each other. However, it is revealed that Treatment 1 and Treatment 2 had similar acceptability by the consumer respondents. Treatment 3 and Treatment 4 had likewise similar acceptability only that Treatment 1 and Treatment 2 were more acceptable than Treatment 3 and Treatment 4.

Table 9. Acceptability of *Sasema* Samples

Treatment	Replication		Treatment Total	Treatment Mean*
	1	2		
1	8.0	8.1	16.1	8.05 ^a
2	7.9	8.1	16.0	8.00 ^a
3	7.3	7.6	14.9	7.45 ^b
4	7.0	7.3	13.3	7.15 ^b
Grand Total			61.3	
Grand Mean				7.66

LSD = 0.3

Table 9.1 Analysis of Variance on Acceptability

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Value	Tabular Value (5%)
Treatment	3	1.145	0.38	13.10**	4.35
Error	4	0.115	0.029		
Total	7	1.26			

**Highly Significant

Cost-Profit Analysis

The Net Profit of each *Sasema* product was obtained based on the computation below:

Product 1

Sales based from the Current Market Price of Php 5.00 for othersimilar product
[Php 5.00 x 135 (maximum yield)] Php 675.00

Less: Direct Cost of Main ingredients . . . **Php 412.00**
 Profit **Php 263.00**
 Less: Labor cost, Selling & Packaging expensesat an estimated 40% **Php 164.80**
Net Profit Php 98.20

Product 2

Sales based from the Current Market Price of Php 5.00 for othersimilar product
[Php 5.00 x 150 (maximum yield)] Php 750.00

Less: Direct Cost of Main ingredients . . . **Php 412.00**
 Profit **Php 338.00**

Less: Labor cost, Selling & Packaging expenses at an estimated 40% **Php 164.80**
Net Profit **Php 173.20**

Product 3

Sales based from the Current Market Price of Php 5.00 for othersimilar product
 [Php 5.00 x 140 (maximum yield)] **Php 700.00**
 Less: Direct Cost of Main ingredients ... **Php 412.00**
 Profit **Php 288.00**
 Less: Labor cost, Selling & Packaging expenses at an estimated 40% **Php 164.80**
Net Profit **Php 123.20**

Product 4

Sales based from the Current Market Price of Php 5.00 for othersimilar product
 [Php 5.00 x 135 (maximum yield)] **Php 650.00**
 Less: Direct Cost of Main ingredients ... **Php 412.00**
 Profit **Php 238.00**
 Less: Labor cost, Selling & Packaging expenses at an estimated 40% **Php 164.80**
Net Profit **Php 73.20**

The cost and profit obtained for each product were valued to determine which obtained the highest net profit based on the cost of production.

Table 10 Rank of Profit of the Four Products

Product	Quantity Output	Cost	Net Profit	Rank
1	135 pcs.	Php 5.00	Php 98.20	3
2	150 pcs.	Php 5.00	Php 173.20	1
3	140 pcs.	Php 5.00	Php 123.20	2
4	130 pcs.	Php 5.00	Php 73.20	4

Table 10 reflects the rank of profit of the different *Sasema* preparations. It shows that product 2 (75/25 Percent *Palawan* flour/Wheat flour *Sasema*) rank 1 in terms of net profit as it yields 150 pieces *Sasema* compared to the other samples which yielded lower than product 2.

IV. CONCLUSION

Treatment 1 (Wheat flour *Sasema*) and Treatment 2 (75/25 *Palawan*/Wheat flour *Sasema*) were the “most accepted” *Sasema* preparations. This was followed by Treatment 3 (50/50 *Palawan*/Wheat flour *Sasema*) and Treatment 4 (25/75 percent *Palawan* flour *Sasema*/Wheat flour *Sasema*) was the “least accepted” of the four *Sasema* preparations.

V. RECOMMENDATIONS

In view of the findings of this study, the following recommendations are offered:

- 1) a feasibility for mass production and marketing plan;

- 2) shelf life of the *Palawan Sasema* should be determined using the same product sample;
- 3) the food product may be subjected for food content analysis;
- 4) packaging should be improved for product marketability;
- 5) follow-up study may be conducted on mass production including packaging and marketing; and
- 6) further study should be conducted using artificial sugar and honey syrup instead of *Karo* and commercial sugar for health-conscious people.

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