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Acceptability of Polvoron with Squash (Cucurbita) Powder

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ABSTRACT

The acceptability of polvoron with squash powder (*Cucurbita*) was conducted to determine the level of acceptability of polvoron squash powder. This study aimed to answer the following questions: (1) What is the level of acceptability of 30 grms, and 50grams polvoron with squash (*Curcubita*)powder in terms of its taste, aroma, texture, appearance, and general acceptability? (2) Is there a significant difference in the level of acceptability of 3%, and 5% polvoron with squash (*Curcubita*)powder in terms of its taste, aroma, texture, appearance, and general acceptability? This study used a convenience sampling technique that involved one hundred fifty (150) students at Iloilo State College of Fisheries. Respondents were given a sensory evaluation checklist to evaluate the product. Mean and overall acceptability levels were measured with the use of a 9-point hedonic scale to answer problems 1. The 2 products, 30 grams and 50 grams, of squash (cucurbit) powder, underwent a sensory evaluation to determine acceptability. Polvoron with squash (*Cucurbita*) powder. The three (3) proportions - control, 30 grams squash powder, and 50 grams squash powder in terms of aroma, taste, texture, appearance and general acceptability are evaluated consistently by the respondents as extremely acceptable. The three (3) groups have significant difference, the p=value is .000 which is lower than the .05 level of significant.

Keywords: Acceptability, Squash, Polvoron, Powder

INTRODUCTION

Background of the Study

Sensory evaluation has been defined as a scientific discipline used to evoke, measure, analyze, and interpret human reactions to meat sensory characteristics as perceived by sight, smell, taste, touch, and hearing by the Institute of Food Technologist.(Gatchalian M.M. ,(1999)

Food acceptability is affected by many factors, which may be related to the individual, the food, or the environment in which the food is consumed. Acceptability is a subjective measure based on hedonics (pleasure), which in turn is influenced by the sensory properties of the food, previous exposure to it and subsequent expectations, contextual factors, an individual's culture, physiological status (i.e., hunger, thirst, and presence/absence of illness), and many other variables. The measurement of food acceptance is highly complex and relies on psychometrics (scales) and behavioral models (food-choice models). This article discusses some innate factors that impact foods' sensory acceptability and how these can be measured and understood using sensory evaluation.

Acceptability refers to determining how well an intervention will be received by the target population and the extent to which the new intervention or its components might meet the needs of the target population

and organizational setting also called adaptability, (Green & Kreuter, 1999; Steckler & Linnan, 2002);(Ayala G.X., 2011).

Cucurbits are herbaceous, tendril-bearing vines adapted to warm climates and killed by frost. The natural distribution of most species is in the tropics and subtropics, but some general, including Bryonia, *Cucurbita*, *Ecballium*, and *Echinocystis*, contain species originating in temperate regions. In cultivation, cucurbits are distributed in almost all arable regions worldwide. Those cucurbits are not adapted to cool temperatures and are cultivated for mature fruits and seeds, which usually fail in regions with short, cool summers. Others, most notably cucumber (Cucumis *sativus*) and summer squash (Cucurbita pepo), are grown for their immature fruits. They are more tolerant of cool temperatures than most cucurbits, with the consequent wide distribution in cultivation.

Cucurbitaceae is a family encompassing more than 1000 species, collectively called cucurbits or gourds. Ten of the c. 1000 species are cultivated globally and considered "major crops" (Chomicki et al., 2020). In India, 17 species are economically important and cultivated throughout the country. Perhaps more than 20 genera are used for culinary purposes, which usually include the consumption of mature fruit flesh, whole immature fruits, and seeds. Based on world production, three genera, Cucumis (cucumbers, melons), *Cucurbita* (pumpkins), and Citrullus (watermelons), rank among the top 10 economically important vegetable crops worldwide. These are excellent sources of ß-carotene, vitamin A, lycopene, and ideal food for weight-conscious people. Some crops have medicinal importance, such as bitter gourd, which treats diabetics' blood disorders, liver disorders, eye problems, alcohol detoxification, piles, psoriasis, and respiratory disorders. It also possesses antiviral, antimalarial, and immune booster activities (Shweta Kumari, Koshlendra Kumar Pandey).

Polvoron (*polboron* in Cebuano *and pulburon* in Tagalog) is a classic dessert every Filipino loves. It is a sweet, crumbly shortbread made of toasted flour, powdered milk, sugar, and butter. These sweet treats originated in Spain. *Polvo* is a Spanish word that means powder or dust. There are several local variants of polvoron, from the traditional polvoron, with *pinipig* (similar to crisp rice), with peanuts, to chocolate-coated polvoron. Cookies and cream-flavored polvoron also exist. In this recipe, we used one of the popular variants: the polvoron recipe with peanuts.

The main ingredient in polvoron making is flour. Flour is an ingredient in many foods; flour is a fine powder made from cereals or other starchy food sources. It is most commonly made from wheat, maize, rye, barley, rice, and other grasses and non-grain. Flour is the crucial ingredient of bread, the staple food in many countries. Therefore, the availability of adequate supplies of flour has often been a significant economic and political issue. Flour can also be made from Squash. Squash is long and narrow with dark-grained skin, somewhat resembling a cucumber. Squash can be made into several products other than those ordinarily used. It can be made into flour. The squash flour is prepared by peeling and slicing two inches thick. They are dried until brittle and ground into refined grains. Squash flour contains vitamin A, an essential nutrient for promoting and maintaining good eyesight (Anna Kerylle D. Talabo, Jeraldine U.Villaruz, 2007).

Producing a polvoron as a delicacy by substituting flour with squash flour, innovating a food with more nutritional value.

Hence, the researcher developed an interest in preparing food like polvoron with squash flour as a dessert that appeals to consumers' tastes.

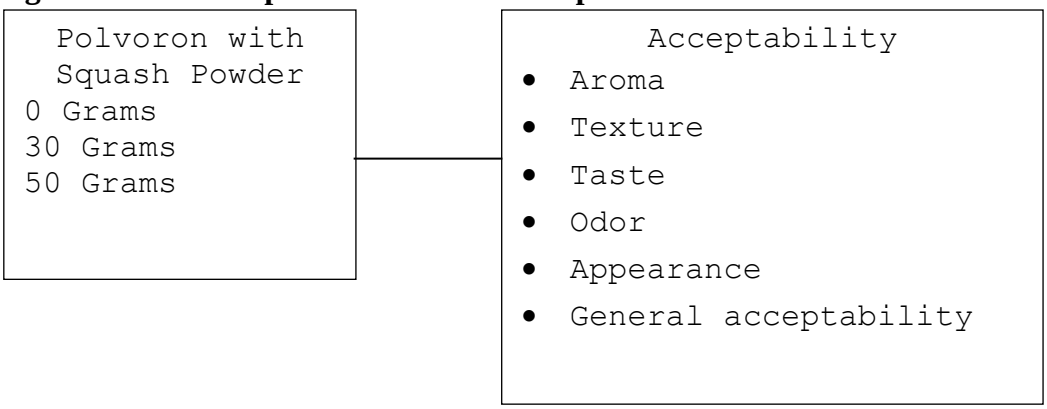
Theoretical Framework

This study is anchored on the theory of adding value to food production. According to Mintel (2011), an astonishing number of new "value-added" products per month are launched in the global food industry. However, a demonstration of the complexity involved with cultural interpretation and just how challenging creating a cultural product can be is found in the exceptionally high failure rate," exceeding 90% for some categories, which suggests that firms have difficulty in developing products that appeal to enough people to warrant continued distribution (Connor & Schiek,1997).

Conceptual Framework

The central concept of this Study is focused on the level of acceptability of polvoron with squash powder as evaluated by appearance, taste, texture, aroma, and general acceptability.

Figure 1. The conceptual model shows the process flow between the variables.



Statement of the Problem

This study aimed to determine the acceptability of Polvoron with Squash Powder.

Specifically, this study sought to answer the following questions:

1. What is the level of acceptability of polvoron with 0 grams, 30 grams, and 50 grams squash powder as evaluated in terms of appearance, taste, texture, aroma, and general acceptability?
2. Is there significant difference in the level of acceptability of polvoron with squash powder as evaluated as to 0 grams, 30 grams and 50 grams in terms of appearance, taste, texture, aroma, and general acceptability?

Hypothesis

The 0.05 alpha level of significant was used as the criterion for accepting or rejecting the null hypothesis. There is no significant difference in the level of acceptability of polvoron 0 grams, 30 grams, and 50 grams with squash powder as evaluated in terms of appearance, taste, texture, aroma, and general acceptability.

Definitions of Terms

For better understanding, some terms used in the study are defined as follows:

Acceptability. Capable or worthy of being accepted. (Merriam-Webster Dictionary)

In this study, acceptability refers to the confirmation/acceptance of using squash powder as the main ingredient in making polvoron.

Polvoron. Is a Filipino-style shortbread made of toasted flour, powdered milk, sugar, and butter (Kawaling Pinoy, 2023).

In this study, polvoron is a powder or dust made of squash flour, sugar, and milk.

Squash. A squash is the edible fruit of a squash plant, but it is considered a vegetable in the kitchen, like peppers and tomatoes. (Vocabulary.com/dictionary, retrieved 2024)

In this study, Squash refers to Squash as the edible fruit of the squash plant, but it is considered a vegetable in the kitchen, the main ingredient in making a polvoron.

Significance of the Study

The result of this study may be beneficial to the following:

Students. This is a tremendous opportunity to help open the doors to research experience.

Teachers. Teachers may adopt the appropriate creation of squash powder as the main ingredient in polvoron and use it as the basis for their laboratory in terms of food production.

Food enthusiast. This study is a source of information or ideas for a business opportunity.

Future researchers. This study will provide information, ideas, and concepts that may be useful to other researchers and further focus on Squash.

Scope and Limitation of the Study

This study focused on the level of acceptability of polvoron with squash powder as evaluated by appearance, taste, texture, aroma, and general acceptability.

This study was conducted at Iloilo State College of Fisheries. The respondents or evaluators of this Study are one hundred fifty (150) students.

The data collected was tallied, analyzed, and interpreted using the Statistical Package for Social Science (SPSS). Mean was used to determine the level of acceptability of polvoron with squash powder in terms of appearance, taste, texture, aroma, and general acceptability. ANOVA was used to determine the difference in the level of acceptability of polvoron with squash powder in appearance, taste, texture, aroma, and general acceptability.

REVIEW OF RELATED LITERATURE AND STUDIES

Squash

Cucurbits are herbaceous, tendril-bearing vines adapted to warm climates and killed by frost. The natural distribution of most species is in the tropics and subtropics, but some general, including Bryonia, *Cucurbita*, *Ecballium*, and *Echinocystis*, contain species originating in temperate regions. In cultivation, cucurbits are distributed in almost all arable regions worldwide. Those cucurbits not adapted to cool temperatures and cultivated for their mature fruits and seeds usually fail in regions with short, cool summers. Others, most notably cucumber (Cucumis *sativus*) and summer squash (Cucurbita pepo), are grown for their immature fruits. They are more tolerant of cool temperatures than most cucurbits, with the consequent wide distribution in cultivation (H.S. Paris).

Cucurbitaceae is a family encompassing more than 1000 species, collectively called cucurbits or gourds. Of the c. 1000 species, ten are cultivated globally and considered "major crops" (Chomicki et al., 2020). In India, 17 species are economically important and cultivated throughout the country. Perhaps more than

20 genera are used for culinary purposes, which usually include the consumption of mature fruit flesh, whole immature fruits, and seeds. Based on world production, three genera, Cucumis (cucumbers, melons), *Cucurbita* (pumpkins, Squash), and Citrullus (watermelons), rank among the top 10 economically important vegetable crops worldwide. These are excellent sources of ß-carotene, vitamin A, lycopene, and ideal food for weight-conscious people. Some crops have medicinal importance, such as bitter gourd, which treats diabetics' blood disorders, liver disorders, eye problems, alcohol detoxification, piles, psoriasis, and respiratory disorders. It also possesses antiviral, antimalarial, and immune booster activities (Shweta Kumari, Koshlendra Kumar Pandey, 2022).

Squash contains antioxidants, particularly beta-carotene, vitamin C, and polyphenols. These nutrients help our bodies fight chronic diseases, including type 2 diabetes, cardiovascular disease, and certain cancers. Higher circulating levels of beta-carotene, in particular, have been shown to reduce all-cause mortality. (1) Good for Your Eyes. Eating Squash can keep the vision keen, too. The beta-carotene and lutein in Squash, as well as vitamin C and other antioxidants and anti-inflammatory, are suitable for the eyes and can help prevent cataracts and macular degeneration. (2) Good for Your Heart. Squash can keep the heart ticking through its abundant supply of carotenoids, which can help lower blood pressure, reduce inflammation, and down-regulate the expression of specific genes linked to heart disease. A 2016 analysis of a data set from rural China in the 1980s found that the more fruits and vegetables people ate, the more they were protected from heart disease, gastric cancer, and stroke. Yellow and orange Squash, in particular, were linked to avoiding these diseases. (3) Good for Balancing Blood Sugar. Bananas and Squash have traditionally been used as hypoglycemic treatments in northwest Iran, China, and Mexico. Researchers in Iran tested the power of banana squash to control blood glucose in critically ill diabetic patients. They gave the patients twice-daily doses of powdered banana squash for three days and measured blood glucose and the amount of insulin each patient required. Within 72 hours, the patient's average blood glucose had dropped from 215 to 178 mg/dl, while insulin requirements decreased by around 20%. The Study, published in 2018, concluded that the powdered banana squash was a "fast and effective" treatment for critically ill diabetic patients. (4) Good for Your Hair and Skin. Squash should also be on the menu, considering healthy hair and skin. Several compounds in Squash, notably beta-carotene, are associated with a healthy dermal (skin) microbiome. (5) Cancer-Fighting Compounds. The health benefits of squash varieties like zucchini are myriad: they contain many bioactive compounds that fight cancer. Moreover, they do it in multiple ways: from combatting genotoxins (toxic agents that damage DNA molecules and cause mutations and tumors) and cytotoxins (compounds that damage all cells, pretty much indiscriminately) to triggering programmed cell death in damaged cells that might otherwise turn cancerous (a process known as apoptosis).

Sensory Quality and Acceptability of Pumpkin Flour Cookies

Based on the Study of Siti Fathonah et al., entitled "The Sensory Quality and Acceptability of Pumpkin Flour Cookies," the results of the sensory quality showed that there were differences in the quality of yellow color, crispness and taste of pumpkin cookies, either with 15% pumpkin flour and 20% pumpkin flour. The sensory quality of cookies with 10% pumpkin flour differs from those with 15% pumpkin flour. In the acceptability test, there are differences in the attributes of yellow color, crispness, and overall. The yellow color and overall attributes differences were found between cookies with 10% and 20% pumpkin flour and between cookies with 15% and 20% pumpkin flour. In the crispness attribute, the difference was found between cookies with 10% and 15% pumpkin flour and cookies with 10% and 20% pumpkin flour.

There was no correlation (p> 0.05) between sensory quality and acceptability of cookies in all sensory attributes, except for the pumpkin flavor attributes (p = 0.039). The content of beta-carotene cookies with 10%, 15%, and 20% pumpkin flour, respectively, are 8.457 mcg, 9.796 mcg, and 12.712 mcg/100 g. There is still a bitter aftertaste that must be removed from the sample by increasing the duration of steaming.

Sensory Acceptability of Squash *(Cucurbita Maxima)*

Another study on Squash by Raymund Moreno entitled "Sensory Acceptability of Squash *(Cucurbita Maxima)* in Making Ice Cream. The result of the study led to the conclusion that there is a significant difference in the level of acceptability of mashed Squash in making ice cream in terms of appearance, aroma, and general acceptability. Therefore, the null hypothesis is rejected. However, there is no significant difference in the level of acceptability of using mashed Squash in making ice cream in terms of taste and texture.(Moreno, R.B., 2019).

Synthesis

Squash. Cucurbits are warm-weather-adapted herbaceous vines with tendrils that are killed by frost. The majority of species are found in the tropics and subtropics in their natural habitat, while certain generic species, such as those found in Bryonia, Cucurbita, Ecballium, and Echinocystis, have their origins in temperate climates. Cucurbits are grown in practically every arable region on the planet. In areas with brief, cool summers, cucurbits that aren't acclimated to cool temperatures and are grown for their ripe fruits and seeds typically don't thrive. Some are grown for their immature fruits, most notably summer squash (Cucurbita pepo) and cucumber (Cucumis sativus). Because they can withstand colder temperatures longer than most cucurbits, they are grown widely (H.S. Paris). The family Cucurbitaceae is home to over a thousand species, which are collectively referred to as cucurbits or gourds.

Pumpkin Flour Cookie's Acceptability and Sensory Quality. Based on Siti Fathonah et al.'s study, "The Sensory Quality and Acceptability of Pumpkin Flour Cookies," the sensory quality findings revealed variations between the 15% and 20% pumpkin flour versions of the cookies in terms of their crispness, flavor, and yellow color. Cookies made with 10% pumpkin flour have a different sensory character than cookies made with 15% pumpkin flour. There are variations in the acceptance test's crispness, overall, and yellow color characteristics. Differences in the yellow hue and general characteristics were observed between cookies made with 10% and 20% pumpkin flour, as well as between cookies made with 15% and 20% pumpkin flour. The variation was observed in the crispness attribute.

Sensory Acceptability of Cucurbita maxima, or squash. The null hypothesis is rejected based on the findings of another study by Raymund Moreno titled "Sensory Acceptability of Squash (Cucurbita Maxima) in Making Ice Cream," which found that there was no significant difference in the level of acceptability of using mashed squash in making ice cream in terms of taste and texture, but there is a significant difference in the level of acceptability of mashed squash in terms of appearance, aroma, and general acceptability.

Research Design

This study used a descriptive research design. A descriptive research design describes the nature of the situation as it existed at the time of the study and explores the causes of the phenomena (Travers, 2000).

As to Day (2001), he defines *descriptive research* as an activity involving data collection to test hypotheses or to answer questions concerning the current status of the subject of the Study.

METHODOLOGY

Participants

This study was conducted at Iloilo State College of Fisheries, Main Campus Tiwi Site, Tiwi, Barotac Nuevo, Iloilo, specifically at the College of Education.

The study's respondents were one hundred fifty (150) from Iloilo State University of Fisheries Science and Technology.

Nadra Mammase, in her study entitled "Adequate number of consumers in a liking test. Insights from resampling in seven studies:" The recommended number of consumers to enroll in a hedonic test comparing several products ranges from 50 to 100, at least if no liking segmentation is sought. The total number of the respondents is one hundred fifty (150) students. In the Study of Sharif & Nasir (2007) In consumer acceptability studies, considering the average standard error in the difference between sample means 10% of sensory scale, 112 panelists are required for a particular set of parameters, in some cases, if product acceptability must be determined at three different countries, total 336 consumer and hundred twelve locations would be required to compare the samples within the location.

The convenience sampling technique was used in this study. It is a method adopted by the researchers to collect market research data from a conveniently available pool of respondents. It is the most used sampling technique, incredibly prompt, uncomplicated, and economical. Members are often readily approachable to participate in the sample (Questionpro.com, retrieved 3/15/22).

Research Instrument

The researcher utilized the adopted sensory (9 hedonic sensory) evaluation checklist for data gathering with the following responses:

1. Like extremely
2. Like Very Much
3. Like Moderately
4. Like Slightly
5. Neither Like or Dislike
6. Dislike Slightly
7. Dislike Moderately
8. Dislike Very Much
9. Dislike Extremely

9 Hedonic Scale Sensory Evaluation

Variables	9	8	7	6	5	4	3	2	1
Aroma									
Taste									
Texture									
Appearance									
General Acceptability									

In interpreting the scores, the following scale was used:

Range			Description
7.3	-	9.0	Extremely Acceptable
5.5	-	7.2	Highly Acceptable
3.7	-	5.4	Moderately Acceptable
1.9	-	3.6	Slightly Acceptable
1.00 - 1.8			Not Acceptable

Data Gathering Procedure

Before conducting the study, the researcher sought approval from the college dean and the thesis adviser. Upon approval, the researcher conducted the Study using a sensory evaluation checklist.

The researcher prepared different proportions of ingredients, tools, and equipment for cooking polvoron with squash powder. Then, the researcher cooked the polvoron with squash powder in different proportions. The cooked polvoron was then prepared in 50 pieces for each proportion for trial 1, which will be conducted at the TVL building. Another preparation of 50 pieces for each proportion for trial two was conducted at the Coed building. The last preparation for 50 pieces for each proportion was conducted at the ISUFST hostel.

The researcher conducts a taste test for trial one and another day for trials 2 and 3. The instruments were collected after a taste test for every trial.

The data were gathered, analyzed, and interpreted through Statistical Package for Social Science (SPSS).

Data Analysis Procedure

The data were tallied, analyzed, and interpreted using SPSS. Mean was used for the descriptive questions to determine the level of acceptability of polvoron with squash powder as the main ingredient as to appearance, texture, taste, aroma, and general acceptability. ANOVA was used for inferential questions to determine if there was a difference in the levels of acceptability between variables.

Procedure for Making Squash Flour (Phase I)

1. Wash the squash in running water.
2. Peel the squash thinly cut lengthwise into four pieces and scrape the soft portion of the squash with the seed.
3. Slice thinly.
4. Sundries for two days until crispy.
5. Grind the crispy squash into a food processor to make powder.
6. Sift the ground squash to remove lumps or large particles.

Procedure for Making Polvoron with Squash Powder (Phase II)

Ingredients:

The following are the ingredients of Polvoron with squash Powder.

30 grams Squash Powder (Flour)
50 grams Squash Powder (Flour)
1000 grams of All-Purpose Flour
150 grams of Powdered milk
200 grams of Butter
500 grams of refined sugar

Procedure:

1. Toast all-purpose flour in a pan on moderate heat for 15 - 20 minutes or until brown. Make sure to stir constantly to avoid burning.
2. Add squash powder (flour); make sure to stir constantly.
3. Add powdered milk and toast for another 5 minutes, also stirring constantly.
4. Add sugar for another 5 minutes, also stirring constantly.
5. Add melted butter. Mix well.
6. When the mixture looks brown, please remove it from the pan and transfer it into a big bowl.
7. Fill the molders with the mixture and press them using a spoon.
8. Chill the polvoron in the fridge inside an airtight container for an hour until firm enough to be wrapped.
9. Keep refrigerated.

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

Level of Acceptability of Polvoron as to Control Group as Evaluated in Terms of Aroma, Taste, Texture, Appearance, and General Acceptability

Table 1 shows the level of acceptability of polvoron in the Control group evaluated in terms of aroma, taste, texture, appearance, and general acceptability. As to aroma, the respondents evaluated the product with a mean score of 7.70 with a standard deviation of 1.25, which is described as extremely acceptable. As to taste, the respondents evaluated the product with a mean score of 7.86 with a standard deviation of 1.17, which is described as extremely acceptable. Regarding texture, the respondents evaluated the product with a mean score of 7.70 with a standard deviation of 1.08, which is considered extremely acceptable. As to appearance, the respondents evaluated the product with a mean score of 7.84 with a standard deviation of 1.07, which is described as extremely acceptable. Regarding general acceptability, the respondents evaluated the product with a mean score of 7.99 and a standard deviation of .98, which is considered extremely acceptable.

This implies that the processes involved in the Study were both substantial and compelling, contributing positively to the intended goal or outcome.

Table 1. Level of Acceptability of Polvoron as to Control Group as Evaluated in Terms of Aroma, Taste, Texture, Appearance, and General Acceptability

Category	Mean	SD	Description
Control Group			
Aroma	7.70	1.25	Extremely Acceptable
Taste	7.86	1.17	Extremely Acceptable
Texture	7.70	1.08	Extremely Acceptable
Appearance	7.84	1.07	Extremely Acceptable
General Acceptability	7.99	.98	Extremely Acceptable

Level of Acceptability of Polvoron as to 30% Squash Powder as Evaluated in Terms of Aroma, Taste, Texture, Appearance, and General Acceptability

Table 2 shows the level of acceptability of polvoron as to 30 grams of Squash powder as evaluated in terms of aroma, taste, texture, appearance, and general acceptability. As to aroma, the respondents evaluated the product with a mean score of 7.37 with a standard deviation of 1.63, which is described as extremely acceptable. As to taste, the respondents evaluated the product with a mean score of 7.80 with a standard deviation of 1.40, which is described as extremely acceptable. Regarding texture, the respondents evaluated the product with a mean score of 7.62 with a standard deviation of 1.24, which is considered extremely acceptable. As to appearance, the respondents evaluated the product with a mean score of 7.77 with a standard deviation of 1.16, which is described as extremely acceptable. Regarding general acceptability, the respondents evaluated the product with a mean score of 7.79 with a standard deviation of 1.32, which is described as extremely acceptable.

This implies that the processes involved in the Study were both substantial and compelling, contributing positively to the intended goal or outcome.

Table 2. Level of Acceptability of Polvoron as to 30 grams of Squash Powder as Evaluated in Terms of Aroma, Taste, Texture, Appearance, and General Acceptability

Category	Mean	SD	Description
3% Squash Powder			
Aroma	7.37	1.63	Extremely Acceptable
Taste	7.80	1.40	Extremely Acceptable
Texture	7.62	1.24	Extremely Acceptable
Appearance	7.77	1.16	Extremely Acceptable
General Acceptability	7.79	1.32	Extremely Acceptable

Level of Acceptability of Polvoron as to 50 grams of Squash Powder as Evaluated in Terms of Aroma, Taste, Texture, Appearance, and General Acceptability

Table 3 shows the level of acceptability of polvoron as to 5o grams of Squash powder as evaluated in terms of aroma, taste, texture, appearance, and general acceptability. As to aroma, the respondents evaluated the product with a mean score of 8.04 with a standard deviation of 1.06, which is described as extremely acceptable. As to taste, the respondents evaluated the product with a mean score of 8.30 with a standard deviation of .86, which is described as extremely acceptable. Regarding texture, the respondents evaluated the product with a mean score of 8.18 with a standard deviation of .91, which is described as extremely acceptable. As to appearance, the respondents evaluated the product with a mean score of 8.27 with a standard deviation of .99, which is described as extremely acceptable. Regarding general acceptability, the respondents evaluated the product with a mean score of 8.33 with a standard deviation of .82, which is considered extremely acceptable.

This implies that the processes involved in the Study were both substantial and compelling, contributing positively to the intended goal or outcome.

Table 3. Level of Acceptability of Polvoron as to 5% Squash Powder as Evaluated in Terms of Aroma, Taste, Texture, Appearance, and General Acceptability

Category	Mean	SD	Description

5% Squash Powder			
Aroma	8.04	1.06	Extremely Acceptable
Taste	8.30	.86	Extremely Acceptable
Texture	8.18	.91	Extremely Acceptable
Appearance	8.27	.99	Extremely Acceptable
General Acceptability	8.33	.82	Extremely Acceptable

Difference in the level of acceptability of polvoron with squash powder as evaluated as to aroma

Table 4 shows the significant difference in the level of acceptability of polvoron with squash powder as evaluated in terms of aroma; the result revealed that the p-value is .000, less than the .05 level of significance with a mean difference of 1.78. This means that the results are statistically significant; thus, the null hypothesis stating that there is no significant difference in the level of acceptability of polvoron with squash powder in terms of aroma is not accepted.

This supports Raymund Moreno's study entitled "Sensory Acceptability of Squash *(Cucurbita Maxima)* in Making Ice Cream. The result of the study led to the conclusion that there is a significant difference in the level of acceptability of mashed Squash in making ice cream in terms of aroma. Therefore, the null hypothesis is rejected.

This implies a significant difference between the control and experimental groups, indicating that the experimental treatment or condition has a noticeable impact on the scent profile, potentially influencing sensory perceptions or product quality.

Table 4. Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to Aroma

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	33.33	2	16.66	9.33	.000
Within Groups	798.35	447	1.78		
Total	831.69	449			

Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to Taste

Table 5 shows the significant difference in the level of acceptability of polvoron with squash powder as evaluated in terms of taste; the result revealed that the p-value is .000, less than the .05 significance level with a mean difference of 1.18. This means that the results are statistically significant; thus, the null hypothesis stating that there is no significant difference in the level of acceptability of polvoron with squash powder in terms of taste is not accepted.

This supports the Study of Siti Fathonah et al., 2020 entitled "The Sensory Quality and Acceptability of Pumpkin Flour Cookies." the results of the sensory quality showed that there were differences in the quality of taste of pumpkin cookies, either with 15% pumpkin flour and 20% pumpkin flour.

This implies a statistically significant difference in taste between the experimental groups. This suggests that the treatment condition applied has a discernible effect on the taste profile, warranting further investigation or consideration in product development or analysis.

Table 5. Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to Taste

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	22.36	2	11.18	8.19	.000
Within Groups	609.56	447	1.36		
Total	631.92	449			

Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to the Texture

Table 6 shows the significant difference in the level of acceptability of polvoron with squash powder as evaluated in terms of texture. The p-value is .000, less than a .05 significance level with a mean difference of 1.18. This means that the results are statistically significant; thus, the null hypothesis stating that there is no significant difference in the level of acceptability of polvoron with squash powder in terms of texture is not accepted.

This supports the Study of Siti Fathonah et al., entitled "The Sensory Quality and Acceptability of Pumpkin Flour Cookies." the results of the sensory quality showed that there were differences in the quality of crispness of pumpkin cookies, either with 15% pumpkin flour and 20% pumpkin flour.

This implies a statistically significant difference in texture between the compared groups. This implies that the factors being studied have a tangible impact on the tactile properties of the subject, potentially influencing consumer preference or product quality.

Table 6. Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to the Texture

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	27.52	2	13.76	11.58	.000
Within Groups	530.98	447	1.18		
Total	558.50	449			

Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to Appearance

Table 7 shows the significant difference in the level of acceptability of polvoron with squash powder as evaluated in terms of appearance. The p-value is .000, lower than the .05 significance level, with a mean difference of 1.16. This means that the results are statistically significant; thus, the null hypothesis stating that there is no significant difference in the level of acceptability of polvoron with squash powder in terms of appearance is not accepted.

This supports the Study of Siti Fathonah et al., entitled "The Sensory Quality and Acceptability of Pumpkin Flour Cookies." the results of the sensory quality showed that there were differences in the quality of yellow color of pumpkin cookies, either with 15% pumpkin flour and 20% pumpkin flour.

This implies a statistically significant difference in visual attributes among the compared conditions of groups. This implies that the studied variables have a noticeable impact on the subject's perception, which could affect product acceptance, marketing, or further investigation into influencing factors.

Table 7. A Significant Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to Appearance

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	21.87	2	10.93	9.39	.000
Within Groups	520.32	447	1.16		
Total	542.19	449			

Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to General Acceptability

Table 8 shows the significant difference in the level of acceptability of polvoron with squash powder as evaluated in terms of general acceptability, with the p-value being .000, which is lower than the .05 significance level with the mean difference of 1.13. This means that the results are statistically significant; thus, the null hypothesis stating that there is no significant difference in the level of acceptability of polvoron with squash powder in general acceptability is not accepted.

This supports Raymund Moreno's study entitled "Sensory Acceptability of Squash *(Cucurbita Maxima)* in Making Ice Cream. The result of the study led to the conclusion that there is a significant difference in the level of acceptability of mashed Squash in making ice cream in terms of general acceptability. Therefore, the null hypothesis is rejected.

This implies a statistically significant difference in overall preference or satisfaction among the studied conditions or groups. This suggests that the variables being evaluated significantly influence the overall perception and likability of the subject, which may have important implications for product development, marketing strategies, or consumer satisfaction.

Table 8. Significant Difference in the Level of Acceptability of Polvoron with Squash Powder as Evaluated as to General Acceptability

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21.77	2	10.88	9.608	.000
Within Groups	506.58	447	1.13		
Total	528.35	449			

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

Based on result of the study, the summary of findings are as follows:

1. The level of Polvoron as to Control Group as evaluated in terms of Aroma, Taste, Texture, Appearance, and General acceptability are consistently evaluated by the respondents as “Extremely Acceptable”.
   The level of Polvoron as to 30% as evaluated in terms of Aroma, Taste, Texture, Appearance, and General acceptability are consistently evaluated by the respondents as “Extremely Acceptable”.
   The level of Polvoron as to 50% as evaluated in terms of Aroma, Taste, Texture, Appearance, and General acceptability are consistently evaluated by the respondents as “Extremely Acceptable”.
2. There is significant difference among variables. When evaluated as to aroma the evaluated with a p-value of .000, the same result revealed as to Taste with a p-value of .000. In terms of Texture, the evaluation revealed that the p-value is .000, likewise as to appearance it has a p-value of .000. The three groups have significant differences; the p-value is .000, lower than the .05 significance level.

Conclusions

Based on the summary of findings, the following conclusions were drawn:

1. When the mean is described as extremely acceptable, it suggests that the average value falls well within the desired or expected range, indicating high satisfaction or conformity to standards. This conclusion implies that the observed data points, on average, meet or exceed the criteria for acceptability, supporting the quality of whatever is being measured.
2. When the result reveals a p-value lesser than the .05 significance level, it indicates statistically significant evidence to reject the null hypothesis. This means that the observed data is unlikely to have occurred by random chance alone, leading to the conclusion that there is a meaningful difference in the data. Therefore, the findings are considered statistically significant and warrant further investigation or consideration.

Recommendations

Based on the findings and conclusions, the researcher made the following recommendations:

1. When the mean is described as extremely acceptable, it suggests that the average value meets or exceeds expectations or standards to a significant degree. Based on the result, it is recommended that the high level of satisfaction be acknowledged. Additionally, it may be beneficial to highlight the consistency and reliability of the data, indicating that the observed mean reflects a desirable outcome. The 3% and 5% squash powder proportions could be used to make polvoron. Thus, this encouraged households and entrepreneurs to produce the product for consumption and business.
2. Based on the findings, strong evidence exists to reject the null hypothesis and support the alternative hypothesis. It is advisable to emphasize the importance of considering the implication of the observed effect or difference. Additionally, recommending further analysis or exploration of the identified significance can deepen understanding in informed decision-making processes. Thus, Future researchers may conduct further studies related to squash powder.

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