SENSORY EVALUATION OF MIRACLE FRUIT (Crescentia cujete) IN MAKING ICE CREAM

College of Technology and Allied Sciences
BOHOL ISLAND STATE UNIVERSITY
Zamora, Bilar, Bohol

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Sensory Evaluation of Miracle Fruit (*Crescentia cujete*) in Making Ice Cream

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Presented to the Faculty of Bohol Island State University
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In Partial Fulfilment
Of the requirements for the
Bachelor of Science in Industrial Technology Major in Food Preparation Service
Management

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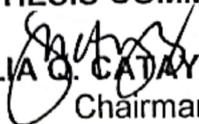
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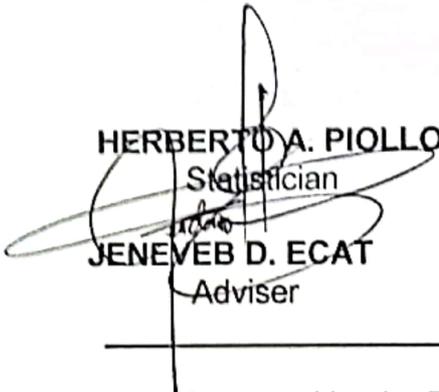
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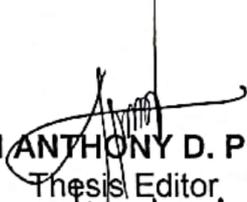
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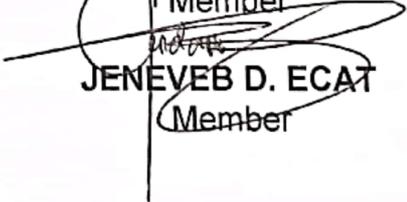
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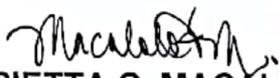Hence, Glory and Praise shall be given to the Heavenly Father, the source of all wisdom and strength who always enlightened and poured out his blessings for the completion of this study.

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<div align="right">

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ABSTRACT

The main purpose of the study was to determine the sensory evaluation on different treatments of Miracle Fruit ice cream in terms of: appearance, aroma, mouthfeel, taste, visual quality, and further determine the significant difference among the three treatments. The study used the experimental design employing the modified 9-Hedonic Scale questionnaire as an instrument in gathering data. There were 40 respondents composed of fifteen (15) BHRST, fifteen (15) BSIT-FPSM3 students, five (5) Faculty of Staff, and (5) TVL Senior High School students. The data were treated using the weighted mean and F-test to determine the difference between the three treatments in terms of appearance, aroma, mouthfeel, taste. The results showed that treatment 1 which composed of 1 cup condensed milk, 250 ml all-purpose nestle cream, 40 ml miracle fruit juice was the most acceptable treatment across all attributes. This denotes that T1 was the most preferred by the respondents because of the general melting score was detected by their tongue. This futher indicates that T1 surpass other treatments in regards to appearance, aroma, mouthfeel, taste, and general acceptability. A Techno Guide was distributed to promote the nutritious and affordable miracle fruit ice cream to the people, to have a mass production and to further encouraged support the food laboratories in the school for product innovation. The researchers' may promote the use of natural resources especially the miracle fruit ice cream that can be procured anywhere. The researchers may enhance and add more flavors in its mixture. Likewise, to determine the difference of its appearance, aroma, mouthfeel, and taste of the ice cream. The school may offer and encourage the product of Miracle Fruit Ice cream as a part of extension program.

TABLE OF CONTENTS

LIST OF FIGURES

CamScanner

LIST OF TABLES

Chapter 1

THE PROBLEM AND ITS SCOPE

Rationale

In recent years, increasing numbers of people have been choosing herbal medicines to improve their health conditions. As a matter of fact, the use of plants has offered an effective medicine for the treatment of illnesses. Moreover, many conventional pharmaceutical drugs are derived directly from both nature and traditional remedies distributed around the world. Nowadays this form of treatment found as the oldest form of health care known to human kind the trend of using plant both in traditional and modern way is still popular and practiced worldwide for the prevention and treatment of certain illnesses (Lady Jane Morilla, Cesar G. Demayo 2019).

In the Philippines, herbal product are the main stay treatment among patients with limited access to conventional medicines and those seeking holistics modalities for Health and Wellness. In fact, the usage continues to increase globally with the growing engagement of science and technology in the scientific and sound development of herbal medicine. The Philippine Institute of Traditional and Alternative Health Care (PITAHC) which aims to include herbal medicine use in the national health care system (University of the Philippines 2018).

On the other hand, a study conducted across the globe focuses on the utilization of these resources as form of food supplement as well as food

alternatives. In Philippines, undertakings were directed to use the abundance of miracle fruit for the benefits of the citizen with regards to health problem. The result can be used to optimize miracle fruit's application and can be applied by food industry and health care provider to develop clinical remedies or disease prevention strategies (University of the Philippines 2018). Hence, used to make medicine from its extract or by just simple boiling it to drink and ease disease like asthma, cancer, and infertility according to the study conducted by Davao Medical School Foundation in Davao City (Henrylito P. Tacio October 15, 2015).

Furthermore, the aforementioned issues and concerns, the researchers are motivated to make miracle fruit ice cream because the researchers noticed that most of the people especially children nowadays are choosy when it comes to eating healthy foods like fruits and vegetables. Thus, the origin of the miracle fruit which the structure of the fruit is large, hard and green in colour and takes about six months to ripen. The researchers had noticed, nobody gives importance to the said tree. Most of the people take it for granted. They just cut and throw it without considering the goodness brought by the miracle fruit tree (Digiulio, 2018).

The study aimed to evaluate the different quantity of miracle fruit juice extract on the sensory profile and acceptability level of miracle fruit ice cream. Moreover, the essential purpose of finding ways in promoting solutions to every health problems mentioned above. Thus, miracle fruit can be utilized in the preparation of ice cream while keeping nutritional level at a high range.

Literature Background

The following related readings served as legal bases of this study:

The 1987 Constitution of the Republic of the Philippines, Article XII, Section 10 states that Science and Technology are essential for national development and progress. The state shall give priority to research and development, invention, innovation, and their utilization; and to science and technology education training and services. It shall support indigenous, appropriate, self-reliant scientific and technological capabilities, and their application to the country's productive systems and national life.

This study is verified and anchored to these legal bases on the Article XIV section 10 of 1987 Philippine Constitution that states that Science and Technology are essential for national development and progress. Further, give priority to research and development, invention, innovation, and their utilization; and to science and technology education, training, and services. Embracive in the article that support to indigenous support to indigenous, appropriate, and self-reliant scientific and technological capabilities, and their application to the country's productive systems and national life. (The 1987 Constitution of the Republic of the Philippines – Article XIV | GOVPH, 2017).

Likewise, the Republic Act No. 8976 otherwise known as Food Fortification Law, declares that the State shall protect and promote the right of health of the people and in still health consciousness among them. Food fortification is considered important in the promotion of optimal health and to

compensate for the loss of nutrients due to processing and/or storage of food and can be used to increase micronutrient content of food or to replace nutrients lost in the food processing, thus played valuable role in preventing dietary deficiencies.

Fortified Foods can fill certain nutrients gaps, which replaced the needs of a healthy balanced diet comprising a variety of foods. Optimal level and balance of nutrients is potentially worthy, and it effect may be related to a higher nutritional awareness among users of fortified food. Furthermore, nutrient stability and absorption with in fortified foods are continually being improved. Plus, standardized method to accurately assess dietary supply, they pave the way for personal approach to optimizing nutrient intake.

Moreover, the study is supported by the Theory of Planned Behaviour pertains that many of the influences on food choice are likely to be mediated by the beliefs and attitudes held by an individual. Thus, beliefs about the nutritional quality and health effects of a food may be more important than actual nutritional quality and health consequences in determining a person's choice. Likewise various marketing, economic, social, cultural, religious or demographic factors will act through the attitudes and beliefs held by the person.

Miracle fruit commonly known as the species of flowering plant, which is native to Central and South America. It is the national tree of St. Lucia and naturalized in India. It has simple leaves and the bark of the tree is rough. Miracle Fruit is a naturally growing plant, commercially referred to as a miracle fruit

(Crescentia cujete), and a smooth, much-branched tree growing to a height of 4.5 meters. From the above information, researchers are encouraged much to explore what is behind the miracle fruit tree produces large spherical fruits, up to 50 cm (20 inches) in diameter, the hard shells of which are useful as bowls, cups, and other containers when hollowed out and the fruit is large, hard and green in colour and takes about six months to ripen. The fruits are pollinated by bats and they develop from the trunk of the tree. Its seeds of the fruit are flat, small and are embedded in the pulp (Fruits info, 2004).

Moreover, the branches of the miracle fruit have simple elliptical leaves clustered at the anode. According to folk medicine, the fruit pulp is used for respiratory problems such as asthma and also used as laxative. The bark is used for mucoid diarrhea. Bark decoction used to clean wounds and pounded leaves used as poultice for headaches. Internally, leaves used as diuretic and also used to treat hematomas and tumours. Fruit decoction used to treat diarrhea, stomach aches, cold, bronchitis, cough, asthma, and urethritis. The leaves are also used for hypertension. The juice from fruits mixed with sugar and/or bee's honey and eaten for problems of the respiratory system (asthma, catarrh), the digestive system (stomach pains, intestinal parasites) and the female reproductive apparatus (infertility). Experts often recommend miracle fruit it is used in the treatment of diabetes mellitus and in food additives against obesity and caries. Anti-allergic, antiviral, lipid lowering and other effects are also reported (E Porchezhian, RM Dobriyal 2003).

Many studies have suggested that increasing consumption like miracle fruit decreases the risk of obesity, diabetes, heart disease, and overall morality, white promoting a healthy completion, increased energy, and overall lower weight (Tacio, 2015).

The Ice cream was introduced the same time cooling device like refrigerators are thought in during the time of America colonization. American ice cream was made from cow's milk, "Sorbetes" was made out of carabao's milk resulting to a cheaper produce. Both kinds of milk are widely used these days. Coconut milk and cassava flour are other ingredients used to make the local ice cream, making "sorbetes" distinct from ice cream in other countries (Siojo, 2018)

Japanese scientist has discovered that consuming ice cream for improves a person's alertness and mental performance. Yoshihiko Koga, a professor at Tokyo's Kyorin University, has carried out a series of clinical trials in which test subjects were required to eat ice cream immediately after waking up. The eating ice cream the same "pleasure spots" of the brain that are lit up by winning money, are listening to a favorite piece of music (Ryalland Rothwell, 2016)

In other study, experts often recommend miracle fruit it is used in the treatment of diabetes mellitus and in food additives against obesity and carries. Anti-allergic, antiviral, lipid lowering and other effects are also reported (E Porchezhian, RM Dobriyal 2003).

There are many Filipinos who are affected by their high-fat, high salt diet. Some examples of these are high blood pressure, which is related to high salt intake, and diabetes and heart disease, which is related to high dietary energy and fat Miracle fruit here in the Philippines is not that popular that's why it is quite expensive in the market (Joven 2019).

```
┌─────────────────────────────────┐
│              Input              │
│          Miracle Fruit          │
│        All Purpose Cream        │
│          Condense Milk          │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│             Process             │
│   Descriptive Research Design   │
│ Preparation and Processing of   │
│        Miracle Fruit Ice Cream  │
│        Sensory Evaluation       │
└─────────────────────────────────┘
                 ↓
┌─────────────────────────────────┐
│             Output              │
│  Techno Guide of Miracle Fruit  │
│           Ice Cream             │
└─────────────────────────────────┘
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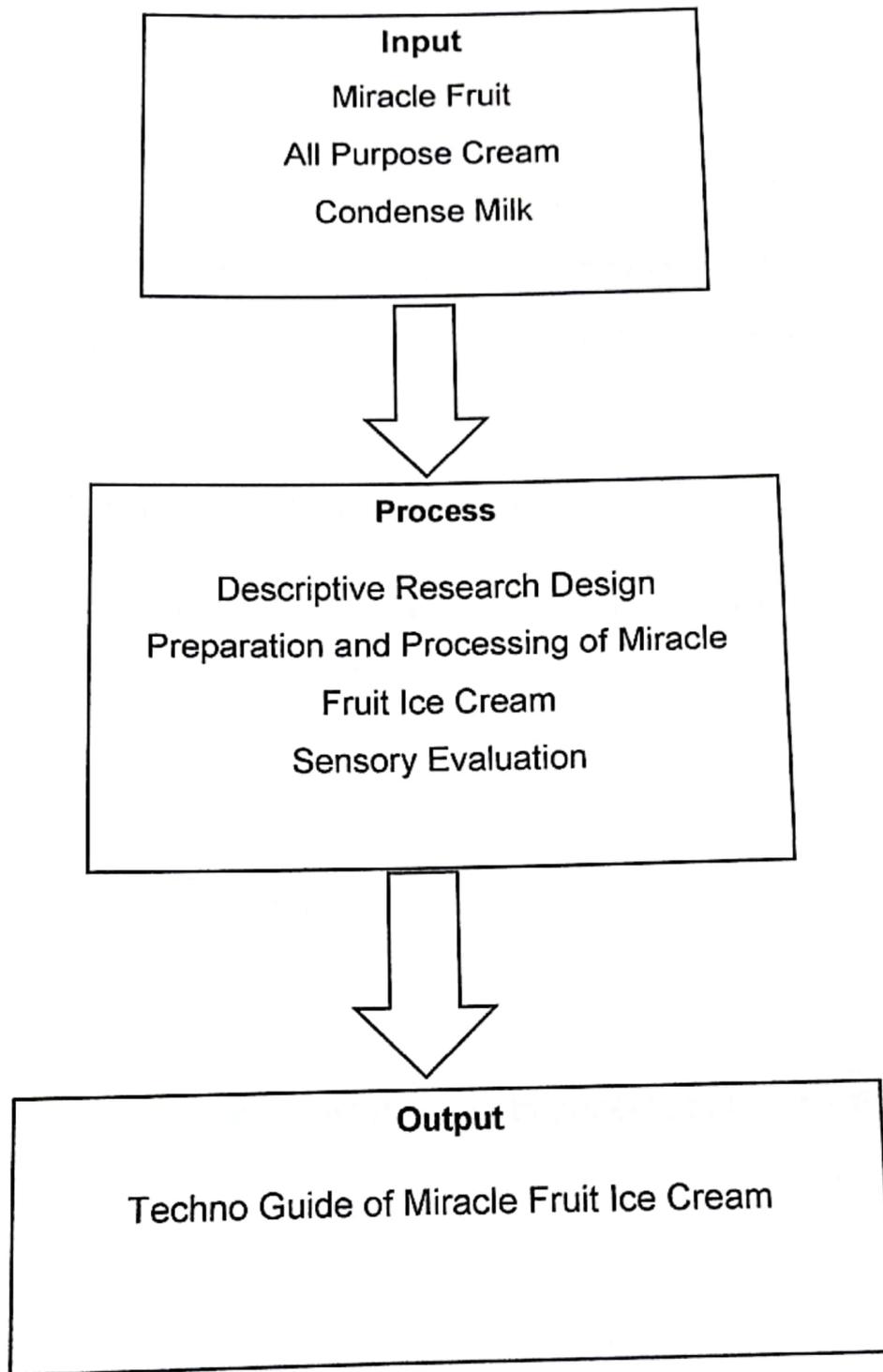
Figure 1. Flow of the Study

THE PROBLEM

Statement of the Problem

This study aimed to determine the sensory evaluation of the different treatments of Miracle Fruit (_Crescentia cujete_) in ice cream making as a new product conducted at Bohol Island State University – Bilar Campus S.Y 2020-2021.

Specifically, the study sought to answer the following questions;

1. What is the demographic profile of the participants in terms of?

    1.1 age;

    1.2 gender;

    1.3 educational attainment and

    1.4 occupation?

2. What is the acceptability level of the different treatments of Miracle Fruit ice cream in terms of?

    2.1 appearance;

    2.2 aroma;

    2.3 mouthfeel;

    2.4 taste and

    2.5 general acceptability?

3. What is the visual quality evaluation of the Miracle Fruit ice cream?

4. Is there a significant difference of the different treatments of Miracle Fruit ice cream?

5. What recommendation can be drawn based on the result of the study?

Null Hypothesis

In the course of this study, the researchers initially believe there is no significant difference in the sensory evaluation of miracle fruit (*Crescentia cujete*) in making ice cream in terms of appearance, aroma, mouthfeel, and taste.

Significance of the Study

The researchers believed that the outcome of this study would be beneficial perfect to the following:

Students. This study would encourage students to discover, enrich or enhance the preparation of new ice cream out from the ingredients available in their locality.

Food Teachers and Cooks. This research would give them idea in preparing an ice cream out from miracle fruit.

Farmers. This would encourage the farmers to plant more and to ensure its availability in the market.

Parents. The study would help parents to have a better option and brilliant ideas in selecting healthy food for their children.

Future Researchers. This would help future researchers in exploring new products and use this study as their reference.

Academe. The researcher's output would be utilize by any school and state universities as another variety of food products and be an outlet for an income generating programs for university extension programs.

Community. This study would provide a new taste and flavour in an ice cream considering miracle fruit as main ingredients.

RESEARCH METHODOLOGY

Design

The study employed a Completely Randomized Design (CRD) method in generating data to determine the sensory attributes of the different treatments of Miracle fruit (*Crescentia cujete*) ice cream in terms of appearance, aroma, mouthfeel, taste, and sensory attributes. The study utilized a questionnaire in data gathering to collect the responses of the most preferred treatment.

R1	R2	R3
T3	T3	T2
T2	T2	T1
T1	T2	T3
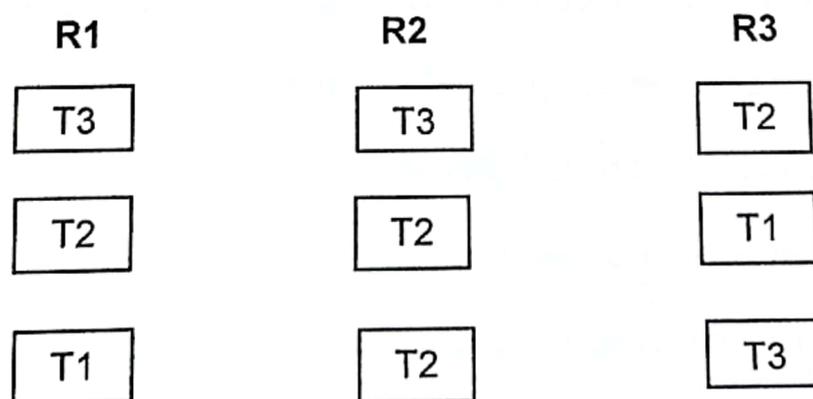
Legend:

T1 = 40 ml Miracle Fruit, 1can (250ml) All Purpose Nestle Cream, and 1 Can Condense Milk
T2 = 80 ml Miracle Fruit 1can (250ml) All Purpose Nestle Cream, and 1 Can Condense Milk
T3 = 120 ml Miracle Fruit 1can (250ml) All Purpose Nestle Cream, and 1 Can Condense Milk

Figure 2. The experimental lay out using CRD.

Environment

The locale of the study was conducted at Bohol Island State University-Bilar Campus, situated along Zamora, Bilar, Bohol. It offers academic and vocational courses which help to improve the skills of the students. The study was conducted in the institution during the academic year 2020-2021.
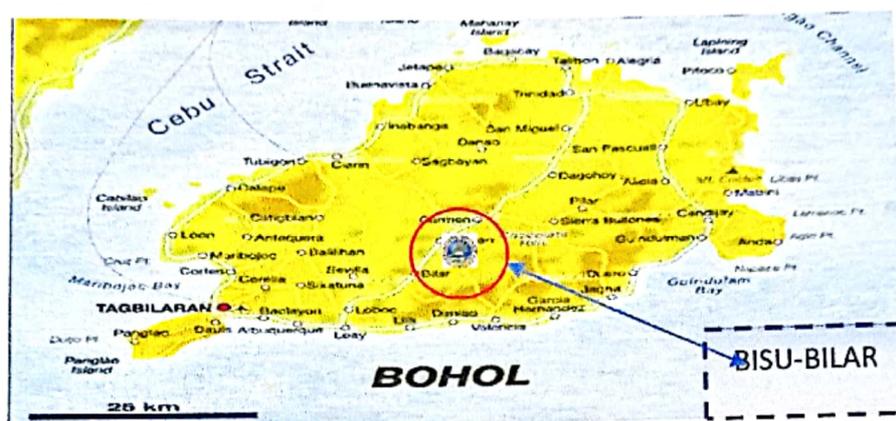
Figure 3: Map of bohol where the school is located.

Participants

The researchers used purposive sampling technique in selecting the forty (40) respondents. The researchers selected 15 respondents from Bachelor in Hotel and Restaurant Service Technology (BHRST), 15 respondents from BSIT-FPSM3, 5 respondents from Faculty Staff, 5 TVL Senior High School Students at Batuan National High School due to the pandemic and lockdown. They are chosen as participants because they are exposed in theory, as well as in the field of cooking.

Instruments

In conducting the study, the researchers formulated a questionnaire to determine the sensory evaluation of the product's in terms of: appearance, aroma, taste, mouthfeel and general acceptability. The questionnaire was utilized as research instruments it is seen to be more reliable and convenient than interview.

The researchers utilized the 9-point hedonic scale questionnaire with the corresponding rate and description such as (9) Like Extremely, (8) Like Very Much, (7) Like Moderately, (6) Like Slightly, (5) Neither Like nor Dislike, (4) Dislike Slightly, (3) Dislike Moderately (2) Dislike Very Much (1) Dislike Extremely.

Procedure

Securing Permit for The Study

The researchers prepared a letter of request to conduct the study noted by the Thesis Adviser, recommended by the chairperson and Dean of the College of Technology and Allied Sciences and approved by the Campus Director. After the approval, the researchers prepared the different treatments of miracle fruit ice cream for the sensory evaluation. Yet, before the distribution of the product, a letter of permission was given to the respondents.

Gathering and Procurement of Materials

The researchers used the following: Cauldron, Blender, Electric Hand Mixer, Mixing Bowl, Measuring Cup, Rubber Scraper, Square Bowl/food container, Handsaw, Spoon, and Freezer in the preparation of Miracle Fruit ice cream.

Assembling of Tools and Equipment

The tools and equipment were checked properly to ensure its working efficacy during preparation of the product. The materials used of this study were purchased by the researchers.

Preparation of Miracle Fruit

The newly harvested Miracle fruit was washed to remove soil and dirt that adhere to the fruit. Then, the fruit was cut into half and scooped the flesh using the spoon and mashed thoroughly. The processed flesh was placed in pot/kettle, without adding water. Lastly, miracle fruit flesh was boiled for about 10 minutes, making the dark color appeared, and then separating the flesh of miracle fruit juice by straining.

Making the Miracle Fruit Ice Cream

Prepare the ingredients needed, then the tools and equipment to be used wear the proper attire in making miracle fruit ice cream. Next is start making by following the procedure and these are follows. In a large bowl, mix together the miracle fruit juice, condense milk, cream and stir to combine all ingredients

until the desired thickness was achieved. Place in a clean container and store in the refrigerator for overnight.

Data Gathering

To obtain the essential data of the study, questionnaires were distributed to the respondents before tasting the prepared treatment. The obtained data was immediately organized and tabulated for interpretation and analysis. The researchers follow the health protocols by observing social distancing, before and after tasting the Miracle Fruit ice cream.

Visual Quality Evaluation

Miracle fruit ice cream was evaluated based on its visual quality. This was employed to determine the duration of time the product can be consumed in different storage area. The researchers stored the product in a clean area in a room temperature and cool temperature.

Statistical Treatment of Data

The data gathered were carefully tallied, tabulated, analyzed, and interpreted to determine the significant difference among treatments for the purpose of presentation and analysis of the data.

To determine the level of sensory evaluation of miracle fruit ice cream in terms of appearance, aroma, mouthfeel, general acceptability and One-Way Analysis of Variance (ANOVA) was used with the formula:

Formula for the One-Way ANOVA

$$F = \frac{MS_{between}}{MS_{within}}$$

The computed weighted mean was described using the following scale:

Range	Description
8.2- 9.0 -	Like Extremely
7.3- 8.1 -	Like Very Much
6.4- 2.7 -	Like Moderately
5.5- 6.3 -	Like Slightly
4.6- 5.4 -	Neither Like nor Dislike
3.7- 4.5 -	Dislike Slightly
2.8- 3.6 -	Dislike Moderately
1.9- 2.7 -	Dislike Very Much
1.0- 1.8 -	Dislike Extremely

OPERATIONAL DEFINITION OF TERMS

The succeeding terms were operationally defined according to its usage in the study.

Appearance. It refers to the physical presentation of the miracle fruit ice cream.

Aroma. Pertains to the distinctive, typically pleasant smell.

Hedonic Scale. A scale used to measure the acceptability level of the Miracle Fruit ice cream.

Ice Cream. A soft frozen food made with sweetened and flavoured all-purpose nestle cream.

Instruments. It refers to particular or specific type of research instruments used in the study.

Miracle Fruit. It refers to the fluid extracted from miracle fruit that was used in the study.

Mouthfeel. It refers to the perceived cupcake mixed with miracle fruit or the products water activity such as hard, crisp, soft, fine or grainy.

Sensory Evaluation. Is subjected measure based on hedonics which in turn is influence by sensory properties of the ice cream.

Chapter 2

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the presentation, analyses, and interpretation of data gathered. The study determined the acceptability level of Miracle Fruit ice cream in terms of appearance, aroma, taste, mouthfeel, and general acceptability. Likewise, the study used the 9-Hedonic Scale survey questionnaire in obtaining the data.

Profile of the Respondents

Table 1 presented the demographic profile of the respondents in terms of age, gender, educational attainment and occupation. Result showed that majority of the respondents were at the age bracket of 17-22 (62.5%) years old and considered to be part of the adolescence. The age bracket of 35-40; 41-46 years old got the lowest percentage of (0%). In terms of gender, result showed that female got the higher rating of 54.17% over male participants of 45.83%. As to educational attainment, the respondents were college level 50%, while college graduate got the rating of 37.5% and, high school level obtained the 12.5%. With regards to participants' occupation, student participants got the higher percentage of 87.5% while teachers obtained low rate of 12.5%.

Table 1

Demographic Profile of the Respondents
n=40

Items	Frequency (f)	Percent (%)
Age		
17-22	25	42.5%
23-28	10	12.5%
29-34	2	5%
35-40	0	5%
41-46	0	0%
47-52	1	2.5%
53-58	2	5%
Total	**40**	**100%**
Sex		
Male	16	40%
Female	24	60%
Total	**40**	**100%**
Educational Attainment		
College Level	20	50%
College Graduate	15	37.5%
High School	5	12.5%
Total	**40**	**100%**
Occupation		
Student	35	87.5%
Teacher	5	12.5%
Total	**40**	**100%**

Table 2 presents the sensory evaluation of the Miracle Fruit ice cream. In terms of appearance, Treatment 2 got the highest weighted mean of 9 interpreted as "Like Extremely", while Treatment 3 got the lowest weighted mean

of 6.19 and interpreted as "Like Moderately". Furthermore, this implied that Treatment 2 was the most preferred treatment to the respondents, it contains 80 ml of Miracle Fruit compared to Treatment 3 with 120 ml of Miracle Fruit. According to David Tanner (2016), the optical appearance of food is important for the consumer. The color of food surface is the first quality parameter evaluated by consumers, and it is critical to product acceptance.

In the acceptability of miracle fruit in terms of aroma, treatment 1 got the highest weighted mean of 8.98 and interpreted as "Like Extremely" while treatment 3 got the lowest weighted mean of 5.33 and likewise interpreted as "Like Slightly". This implied that Treatment 1 had the most pleasant smell among treatments. According to Mark Anthony (2017), aroma is the first cousin of taste. In fact, much of what we call taste is an intricately entwined matrix of flavor, aroma chemicals and texture or mouthfeel.

Mouthfeel of the products such as hard, crisp, soft, fine or grainy contributes to induce the customer appetite. In terms of Mouthfeel, both Treatment 1 and Treatment 2 generated the highest rate of 8.85 followed by Treatment 3 got the lower weighted mean of 8.49. All treatments were interpreted as "Like Extremely". This implied that Treatment 1 and Treatment 2 were most favored by the respondents in favor of mouthfeel.

In terms of taste, Treatment 1 got the highest weighted mean of 9 and was interpreted as "Like Extremely" and Treatment 3 got the lowest weighted mean of 5.33 interpreted as "Like Slightly". This denoted that Treatment 1 was

most preferred by the respondents. Taste belongs to the chemical sensing system. Tasting begins when molecules stimulate special cells in the mouth or throat. These special cells transmit messages through nerves to the brain, where specific tastes are identified, according to Melissa Conrad Stoppler, (2020).

In the overall acceptability of the product, both Treatment 1 and Treatment 2 were described as "Like Extremely" wherein Treatment 1 got the highest weighted mean of 8.94 and Treatment 3 got the lowest weighted mean of 6.34 and further described as "Like Moderately". This indicates that Treatment 1 surpass other treatments in regards to appearance, aroma, mouthfeel, and taste.

Table 2

**Acceptability Level of Miracle Fruit Ice Cream
In Different Treatments**

Sensory Attributes	Treatment 1		Treatment 2		Treatment 3	
	WM	Description	WM	Description	WM	Description
Appearance	8.92	Like Extremely	9	Like Extremely	6.19	Like Moderately
Aroma	8.98	Like Extremely	7.53	Like Very Much	5.33	Like Slightly
Taste	9	Like Extremely	7.53	Like Very Much	5.33	Like Slightly
Mouthfeel	8.85	Like Extremely	8.85	Like Extremely	8.49	Like Extremely
General Acceptability	8.94	Like Extremely	8.23	Like Extremely	6.34	Like Moderately
Average Weighted Mean	8.94	Like Extremely	8.23	Like Extremely	6.34	Like Moderately

Indication

Range		Description
8.2- 9.0	-	Like Extremely
7.3- 8.1	-	Like Very Much
6.4- 2.7	-	Like Moderately
5.5- 6.3	-	Like Slightly
4.6- 5.4	-	Neither Like nor Dislike
3.7- 4.5	-	Dislike Slightly
2.8- 3.6	-	Dislike Moderately
1.9- 2.7	-	Dislike Very Much
1.0- 1.8	-	Dislike Extremely

Figure 4 presented the visual quality evaluation of the miracle fruit ice cream. It was stored in room temperature and cool temperature. The observation of the product shows that product stored in the room temperature can only be consumed within a very short period of time while, product stored in the cool temperature can be consumed for about 2-3 months and it would last longer if it's stored properly.
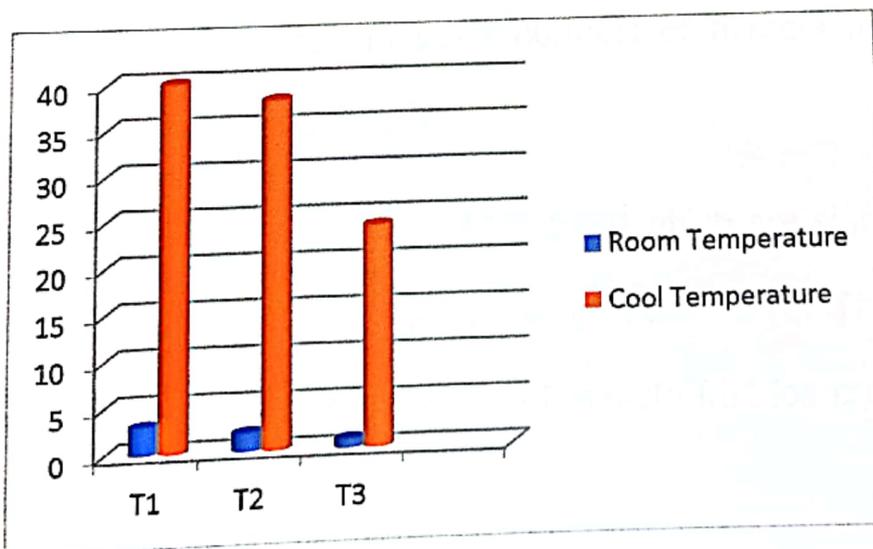
Figure 4. Visual Quality Evaluation of Miracle Fruit of Ice Cream

One way-Analysis of Variance (ANOVA) was used to test the significant difference among the three treatments in terms of appearance, aroma, taste, mouthfeel. The computed P-value less than 0.05 degree of significance.

The table 3 presents the difference in respondent's sensory evaluation. The F-value obtained from appearance is 383.16763 which is significant at 0.05 level of significance with df (2) and p-value of 4.37046. This means that there is a significant difference in the appearance of miracle fruit ice cream, therefore the null hypothesis was accepted.

In terms of aroma, the computed F-Value is 1034.3360 is significant at 0.05 level of significance with df (2) and P-Value of 4.19904 E-75. This means that there is a significant difference in the aroma of miracle fruit ice cream thus the null hypothesis is accepted.

For the mouthfeel, the F-Value is 21.07812286 which are significant at 0.05 level of significance with df (2) and P-Value of 1.5212E. This means that there is no significant difference in the mouthfeel of miracle fruit ice cream therefore the null hypothesis is accepted.

The F-Value obtained for taste is 1057.2860 which are significant at 0.05 level of significance with df (2) and P- Value of 1.2449E-75. This means that there is a significant difference in the taste of miracle fruit ice cream, therefore the null hypothesis is accepted.

Table 3.

Difference in the Acceptability Level of Miracle Fruit Ice Cream In Terms of Sensory Attributes

Sensory attributes	Degree of Freedom	Sum of Square	Mean Square	Observe F	P-Value	Description	Interpretation
Appearance	2	204.2878717	102.1439358	383.1676354	4.37046 E-52	Significant	Reject Ho
Aroma	2	269.99008	134.995	1034.33603	4.19904 E-75	Significant	Reject Ho
Taste	2	272.241122	136.1206	1057.286028	1.2449E -75	Significant	Reject Ho
Mouthfeel	2	3.441635	1.720818	21.07812286	1.5212E -08	Significant	Reject Ho

The result implies that the paired treatments mentioned have significant of miracle fruit ice cream. Meanwhile, in terms of appearance (T1 vs. T3; T2 vs. T3), aroma (T1 vs. T3), taste (T1 vs. T3; T2 vs. T3), mouthfeel (T1 vs. T3; T2 vs. T3) has no significant difference because of the three treatment varying consistency due to the different treatment.

Table 4

Comparison of Respondents Sensory in terms of Appearance

Post Hoc Analysis for Appearance

Pairing of Treatments	P-value	Interpretation	Decision
T1 vs T2	0.369243461	Insignificant	Accept Hypothesis
T1 vs T3	7.58697E-05	Significant	Reject Hypothesis
T2 vs T3	0.00018471	Significant	Reject Hypothesis

Comparison of Respondents Sensory in terms of Aroma
Post Hoc Analysis for Aroma

Pairing of Treatments	P-value	Interpretation	Decision
T1 vs T2	0.141059134	Insignificant	Accept Hypothesis
T1 vs T3	0.049948062	Significant	Reject Hypothesis
T2 vs T3	0.397053695	Insignificant	Accept Hypothesis

Comparison of Respondents Sensory in terms of Mouthfeel
Post Hoc Analysis for Mouthfeel

Pairing of Treatments	P-value	Interpretation	Decision
T1 vs T2	0.55894482	Insignificant	Accept Hypothesis
T1 vs T3	0.00142848	Significant	Reject Hypothesis
T2 vs T3	0.002514821	Significant	Reject Hypothesis

Comparison of Respondents Sensory in terms of Taste
Post Hoc Analysis for Taste

Pairing of Treatments	P-value	Interpretation	Decision
T1 vs T2	0.60708767	Insignificant	Accept Hypothesis
T1 vs T3	0.92151E-05	Significant	Reject Hypothesis
T2 vs T3	0.000253563	Significant	Reject Hypothesis

Chapter 3

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary of findings, conclusion and recommendation based on the analysis and interpretation of the data.

SUMMARY

The objective of the study was to determine the sensory evaluation of miracle fruit ice cream in terms of appearance, aroma, taste, mouthfeel and general acceptability, and visual evaluation quality among the three treatments. The researchers used experimental, descriptive research design, and Complete Randomized Design (CRD) method. These designs were used to determine the respondents' perceptions on the acceptability level of miracle fruit ice cream. A sensory evaluation tool was utilized to determine the respondents' sensory preferences in terms of appearance, aroma, taste, and mouthfeel among the three treatments. The researcher provided questionnaire as instrument to rate the participants' acceptability level of the product. The questionnaire is a 9-Hedonic scale with the numerical scale and descriptive rating of (9) like extremely, (8) like very much, (7) like moderately, (6) like slightly, (5) neither like nor dislike, (4) dislike slightly, (3) dislike moderately (2) dislike very much (1) dislike extremely. The participants were given ample time to answer the questionnaire, in interval of 5 minutes was given in between the tasting or evaluation of each treatment. They were given water to rinse their mouth before and after tasting each treatment to neutralize the palate.

The locale of this study was at Bohol Island State University-Bilar, Zamora, Bilar, Bohol during the academic years of 2021-2022 with forty (40) participants composed of fifteen (15) respondents from Bachelor in Hotel and Restaurant Service Technology (BHRST), fifteen(15) respondents from BSIT-FPSM3, five (5) respondents from Faculty Staff, five (5)TVL Senior High School Students.

Right after the testing of the product, the questionnaire was retrieved back for the analysis and interpretation of data. The result were tallied, computed and tabulated using the weighted mean to determine the acceptability level of the participants to the product. The data in further subjected to Anova and P-test were used in obtaining the significant difference between each treatment.

FINDINGS

After the data were analysed and interpreted, the researchers came up with the following findings:

The demographic profile of the respondents in terms of age, gender, educational attainment and occupation. Result shows that majority of the respondents are at the age bracket of 17-22 years old female, college level and students.

In terms of sensory evaluation of the product, Treatment 1 obtain the highest acceptability level among all treatments and surpass in all sensory attributes such as appearance, aroma, mouthfeel, taste.

It was observed and identified the gradual changes of Miracle Fruit Ice cream from good condition to its degenerative state. The researcher stores the product in a clean area with room temperature still in good condition and consumable within 2-3 days. While, in cool temperature storage particularly in a freezer unopened lasted for about 2-3 months the ice cream last for a shorter period of time.

It shows that the paired treatment in terms of appearance, aroma, mouthfeel, taste, and general acceptability have a significant difference. A comparison between paired treatments was further employed to provide specific information and result shows that the null hypothesis was accepted.

Conclusions

Based on the findings of the study, the researchers concluded the following:

Treatment 1 which composed of 40ml of miracle fruit juice, I can (250ml) all-purpose cream, 1 can (250ml) condensed milk was the most acceptable treatment in terms of the different sensory attributes evaluation conducted. T1 obtain the highest numbers of days where the product was visually observed through its physical characteristic and condition.

Recommendations

Based on the findings and conclusion of the study, the researchers offered the following recommendations:

1. The researcher may promote the use of natural resources especially the Miracle fruit in producing ice cream that can be procured anywhere.

2. Future research may enhance and add more flavors to mixture to further determine the difference in terms of its appearance, aroma, taste and mouthfeel of the ice cream.

3. The academe may improve and enhance the Miracle Fruit Ice cream as a form of extension program.

Republic of the Philippines

BOHOL ISLAND STATE UNIVERSITY – BILAR CAMPUS

Zamora, Bilar, Bohol

Rationale

Filipinos are food lovers specially ice cream. In this connection, there is a non-stop research in the different kinds of ice cream. There are creative means of looking for various alternatives of ice cream. This is done for survival. Filipinos live in a tropical and agricultural country which enjoys an abundant food supply and one of these is food from the miracle fruit.

The researcher conducted across the globe focuses on the utilization of these resources of miracle fruit as form of food supplement as well as food alternatives. In Philippines, undertakings were steered to use the abundance of miracle fruit for the benefits of the citizen with regards to problem about health.

The findings of the study revealed that food production utilizing local resources is acceptable to the respondents, but that additional research is needed for the people's benefit. This newly designed product aids and advises students in the development of some of their as they innovate in the development of a new type of product that may generate more cash. The entrepreneurial concept also includes producing and introducing Miracle fruit *Crescentia cujete* ice cream to the school and community.

II. OBJECTIVES

The suggested technology package aims to fulfill the following goals, according to the researchers

1. To provide Miracle fruit *Crescentia cujete* ice cream to the school and community an affordable price.

2. To promote the use of locally available resources.

3. To encourage the community to utilize locally available farm resources of Miracle fruit Tree;

4. Create a new Miracle fruit *Crerscentia cujete* Ice cream product.

In making Miracle fruit Ice Cream needs the following ingredients tools and equipment observing the proven procedural steps

A. Ingredients:

Whole Green

Miracle Fruit

Nestle Cream

Condensed Milk

B. Tools and Equipment:
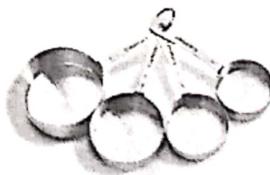
Measuring Cups

Mixer

Mixing Bowl

C. Procedure

C.1 Preparation of Miracle Fruit Juice.

1 Preparation of Miracle fruit ice cream.

1. Gather miracle fruit, then wash thoroughly.	
2. Scoop the miracle fruit, then put into the bowl.	
3. In the boiling water, put the mash miracle fruit cook until it changes the color from white to purple, then after few second remove from the fire. Let it cool.	
4. Strain to separate the juice of miracle fruit.	

C.2 Preparation of miracle fruit Ice Cream

1. Gather all the ingredients, tools and utensils needed.	
2. Measure all the ingredients needed.	
3. Add all the ingredients, including the miracles fruit juice, then continue whipping until the desired smooth achieved.	
7. After that put it into the ice cream cup then freeze it to 24 hours.	

C.2 Preparation of making Miracle Fruit Ice Cream

1. Gather all the ingredients, tools and utensils needed.
2. Measure all the ingredients needed.
3. In a bowl whipped the chilled all-purpose cream until soft peak.
4. Then add miracle juice then whip again.
5. Add the condense milk. Continue to whip until the desired smooth and texture of the ice cream achieve.

Reference

Ejelonu, B., Lasisi, A., Olameru, A., & Ejelonu, O. (2011, December 26). The chemical constituents of calabash (Crescentia cujete). *African Journal of Biotechnology, 10*(84), 19631-19636. doi:10.5897/AJB11.1518

E Porchezhian, RM Dobriyal 2003). Experts often recommend miracle fruit it is used in the treatment of diabetes mellitus and in food additives against obesity and caries https://www.webmd.com/vitamins/ai/ingredienmono-1171/miracle-fruit

Mousavi, M., Hesmati, A., Garmakhany, A. D., Vahidinia, A., & Taheri, M. (2019, February 13). Texture and sensory characterization of functional yogurt supplemented with flaxseed during cold storage. *Food Science & Nutrition, 7*(3), 907-917. doi:https://doi.org/10.1002/fsn3.805

Olaniyi, M. B., Olaniyi, A. A., & Lawal, I. O. (2018, April 25). Proximate, phytochemical screening and mineral analysis of Crescentia cujete L. leaves. *Journal of Medicinal Plants for Economic Development, 2*(1). doi:https://doi.org/10.4102/jomped.v2i1.28

Oseni, Adebayo, L., Iddrisu, & Abdul-Mumeen. (2012). An evaluation of relative stabilities of selected local herbal concoctions stored in Calabash fruit pods and clay pot containers. *Journal of Chemical and Pharmaceutical Research, 4*(1), 409-415. Retrieved April 29, 2021, from www.jocpr.com

Rellin, K. F., Dasmariñas, D. D., & Junio, H. A. (2018, April 05). Untargeted Metabolite Profiling of Philippine-grown Crescentia cujete and its Commercial Fruit Juice using GC-MS and UPLC-HRMS. *Philippine Journal of Science, 147*(04), 647-658. Retrieved April 29, 2021, from https://philjournalsci.dost.gov.ph/images/pdf/pjs_pdf/vol147no4/untargeted_metabolite_profiling_of_philippine_grown_crescentia_cujete_.pdf

Theis, M., Richárd, M., Bell, K., & DeGolier, T. (2017, April 07). Crescentia cujete (calabash tree) seed extract and fruit pulp juice contract isolated uterine smoothmuscle tissues from Mus musculus. (T. DeGolier, Ed.) *Journal of Medicinal Plants Studies, 5*(5), 10-15. Retrieved April 29, 2021, from https://www.plantsjournal.com/archives/2017/vol5issue5/PartA/5-4-37-957.pdf

Appendix A
LETTER REQUEST

Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY
Bilar Campus
Zamora Bilar, Bohol

College of Technology and Allied Sciences

July 07, 2021

Thesis Committee Member
Madam/Sir,

The undersigned has the honor to request your approval as member of the committee for the thesis of the undergraduate students of their requirements of the degree BACHELOR OF SCIENCE IF INDUSTRIAL TECHNOLOGY with the specialization of FOOD PREPARATION SERVICE MANAGEMENT.

TITLE

"SENSORY EVALUATION OF MIRACLE FRUIT IN MAKING ICE CREAM"

The candidate has been instructed to have consultation with you about the above title. Kindly make the necessary recommendations to have a successful research output.

Thank you for your assistance on this matter.

Very truly yours,

NELIA CATAYAS, Ph.D.
Subject Instructor

CONFORM
Name of Faculty

	Committee	Signature
1. Jeneveb D. Ecat	Adviser	_____
2. Eng. Severino Salera Jr.	Statisticial	_____
3. Herbert Piollo	Internal Expert	_____
4. John Anthony Piollo	Editor	_____

Appendix B
APPROVAL LETTER

Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY
Bilar Campus
Zamora, Bilar, Bohol

JULY 07, 2021

MARIETTA C. MACALOLOT, Ph.D.
Campus Director
BISU-Bilar Campus

Greetings!

We, the third year college students of Bohol Island State University pursuing the degree in Bachelor of Science in Industrial Technology major in Food Preparation Service Management (BSIT-FPSM3) and currently enrolled in Technology Research II in the S.Y. 2020-2021. In partial fulfillment of the degree, the researchers are asking permission from your good office to conduct a study entitled **"SENSORY EVALUATION OF MIRACLE FRUIT IN MAKING ICE CREAM"**.

In line with this, we would like to ask permission from your humble office to allow us to distribute and gather the data necessary in this study. We the researchers assure that this undertaking will follow the health protocols set upon by the university in the distribution and retrieval of the data for safety purposes for both parties.

We are looking forward for your approval.
Thank you so much and God Bless!

Very truly yours,

Lomon, Danica Myka G.
Lontoc, Kenneth Jefriel T.
Macabudbud, Shara Mae S.
Samorano, Angelo I.
Student Researchers

Noted by:

Recommending Approval:

JENEVEB D. ECAT
Adviser

ARLEN B. GUDMALIN, Ph.D.
Dean, CTAS

Approved by:

MARIETTA C. MACALOLOT, Ph.D.
Campus Director

Appendix C
QUESTIONNAIRE
Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY
Bilar Campus
Zamora, Bilar, Bohol

COLLEGE OF TECHNOLOGY AND ALLIED SCIENCES
Department of Hospitality Management and Industrial Technology

SENSORY EVALUATION OF MIRACLE FRUIT *(Crescentia cujete) in Making* ICE CREAM

To our respondents,

The researchers are conducting a study on the "**SENSORY EVALUATION OF MIRACLE FRUIT *(Crescentia cujete) in Making* ICE CREAM**". In that connection, we would like to ask your cooperation in answering the questions.

Kindly answer the following questions honestly. Your answer will be treated with confidentiality.

Thank you very much.

Sincerely yours,

The researchers

Modified 9 Hedonic Scale on Evaluating Miracle Fruit in Making Ice Cream

SURVEY QUESTIONNAIRE

Age:

Occupation:

Gender:

Educational Attainment:

Directions: Taste the given samples one at a time, then below are the numerical scale for your assessment to the product. Please check (☑) in the column which best describes your evaluation.

Legend:

1	-	Dislike Extremely
2	-	Dislike Very Much
3	-	Dislike Moderately
4	-	Dislike Slightly
5	-	Neither Like nor Dislike
6	-	Like Slightly
7	-	Like Moderately
8	-	Like Very Much
9	-	Like Extremely

	Treatment 1								
Indicators	9	8	7	6	5	4	3	2	1
	Like Extremely	Like Very Much	Like Moderately	Like Slightly	Neither Like nor Dislike	Dislike Slightly	Dislike Moderately	Dislike Very Much	Dislike Extremely
A. Appearance									
B. Aroma									
C. Mouthfeel									
D. Taste									

Indicators	Treatment 2								
	9	8	7	6	5	4	3	2	1
	Like Extremely	Like Very Much	Like Moderately	Like Slightly	Neither Like nor Dislike	Dislike Slightly	Dislike Moderately	Dislike Very Much	Dislike Extremely
A. Appearance									
B. Aroma									
C. Mouthfeel									
D. Taste									

Indicators	Treatment 3								
	9	8	7	6	5	4	3	2	1
	Like Extremely	Like Very Much	Like Moderately	Like Slightly	Neither Like nor Dislike	Dislike Slightly	Dislike Moderately	Dislike Very Much	Dislike Extremely
A. Appearance									
B. Aroma									
C. Mouthfeel									
D. Taste									

Suggestions/Recommendation:_____

_____

_____

_____

_____.

Appendix D
Computation of The One-way Analysis of Variance

Appearance

Groups	Count	Sum	Average	Variance
T1	40	356.67	8.91675	0.038591731
T2	40	360	9	0
T3	40	247.66	6.1915	0.761141282

ANOVA

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F	Significant
Between Groups	204.2878717	2	102.1439358	383.1676354	3.073762904
Within Groups	31.1895875	117	0.266577671		
Total	235.477459	119			

Aroma

Groups	Count	Sum	Average	Variance
T1	40	359.34	8.9835	0.005305385
T2	40	301.31	7.53275	0.169933269
T3	40	213.39	5.33475	0.2163025

ANOVA

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F	Significant
Between Groups	269.99008	2	134.995	1034.33603	3.073762
Within Groups	15.270105	117	0.130514		9
Total	285.26019	119			

Mouthfeel

Groups	Count	Sum	Average	Variance
T1	40	354.06	8.8515	0.027643846
T2	40	354.02	8.8505	0.051040769
T3	40	339.67	8.49175	0.166235321

ANOVA

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F	Significant
Between Groups	3.441635	2	1.720818	21.07812286	3.0737629
Within Groups	9.5518775	117	0.08164		
Total	12.9935125	119			

Taste

Groups	Count	Sum	Average	Variance
T1	40	360	9	0
T2	40	301.31	7.53275	0.169933269
T3	40	213.39	5.33475	0.2163025

ANOVA

Source of Variation	Sum of Square	Degree of Freedom	Mean Square	F	Significant
Between Groups	272.241122	2	136.1206 0.128745	1057.286028	3.073763
Within Groups	15.063195	117			
Total	287.304317	119			

Appendix E

RAW DATA

n=40

R.N	Appearance											
	T1				T2				T3			
	R1	R2	R3	Average	R1	R2	R3	Average	R1	R2	R3	Average
1	9	9	9	9	9	9	9	9	8	7	7	7.33
2	9	9	9	9	9	9	9	9	7	8	5	6.67
3	9	9	9	9	9	9	9	9	7	7	6	6.67
4	9	9	9	9	9	9	9	9	7	7	5	6.33
5	9	9	9	9	9	9	9	9	7	9	5	7
6	9	9	9	9	9	9	9	9	7	9	6	7.33
7	9	9	9	9	9	9	9	9	7	9	6	7.33
8	9	9	9	9	9	9	9	9	7	8	7	7.33
9	9	9	9	9	9	9	9	9	8	7	7	7.33
10	9	9	9	9	9	9	9	9	8	7	7	7.33
11	9	9	9	9	9	9	9	9	6	7	7	6.67
12	9	9	9	9	9	9	9	9	7	9	6	7.33
13	9	9	9	9	9	9	9	9	7	9	5	7
14	9	9	9	9	9	9	9	9	7	7	5	6.33
15	9	9	9	9	9	9	9	9	8	7	5	6.67
16	9	9	9	9	9	9	9	9	9	7	5	7
17	9	9	9	9	9	9	9	9	7	7	7	7
18	9	9	9	9	9	9	9	9	6	7	5	6
19	9	9	9	9	9	9	9	9	6	7	4	5.67
20	9	8	9	8.67	9	9	9	9	7	7	3	5.67

No.				Avg								Avg
21	9	8	9	8.67	9	9	9	9	7	9	3	6.33
22	8	8	9	8.33	9	9	9	9	6	8	4	6
23	8	8	9	8.33	9	9	9	9	7	7	4	6
24	9	9	9	9	9	9	9	9	7	8	5	6.67
25	8	8	9	8.33	9	9	9	9	7	7	3	5.67
26	9	8	9	8.67	9	9	9	9	7	8	4	6.33
27	9	9	9	9	9	9	9	9	7	7	4	6
28	9	8	9	8.67	9	9	9	9	7	7	4	6
29	9	9	9	9	9	9	9	9	7	8	3	6
30	9	9	9	9	9	9	9	9	7	7	5	6.33
31	9	9	9	9	9	9	9	9	5	7	2	4.67
32	9	9	9	9	9	9	9	9	4	7	4	5
33	9	9	9	9	9	9	9	9	4	9	3	5.33
34	9	9	9	9	9	9	9	9	3	7	4	4.67
35	9	9	9	9	9	9	9	9	4	7	3	4.67
36	9	9	9	9	9	9	9	9	4	7	4	5
37	9	9	9	9	9	9	9	9	4	7	2	4.33
38	9	9	9	9	9	9	9	9	4	7	4	5
39	9	9	9	9	9	9	9	9	6	7	4	5.67
40	9	9	9	9	9	9	9	9	7	7	4	6
	TOTAL AVERAGE:			132.7	TOTAL AVEARGE:			176.3	TOTAL AVERAGE:			149.7

Aroma

R.N	T1				T2				T3			
	R1	R2	R3	Average	R1	R2	R3	Average	R1	R2	R3	Average
1	9	9	9	9	8	8	7	7.67	4	5	7	5.33
2	9	9	9	9	8	8	6	7.33	5	5	7	5.67
3	9	9	9	9	8	8	6	7.33	5	5	7	5.67
4	9	9	9	9	8	8	6	7.33	5	5	7	5.67
5	9	9	9	9	8	8	6	7.33	5	5	7	5.67
6	9	9	9	9	8	8	6	7.33	5	5	7	5.67
7	9	9	9	9	8	8	6	7.33	5	5	7	5.67
8	9	9	9	9	8	8	5	7	5	5	7	5.67
9	9	9	9	9	7	8	5	6.67	5	5	7	5.67
10	9	9	9	9	7	8	5	6.67	5	5	7	5.67
11	9	9	9	9	7	8	6	7	5	5	5	5
12	9	9	9	9	7	8	6	7	5	5	5	5
13	9	9	9	9	8	8	6	7.33	5	6	5	5.33
14	9	9	9	9	9	8	5	7.33	5	6	6	5.67
15	9	9	9	9	9	8	5	7.33	5	6	6	5.67
16	9	9	9	9	9	8	5	7.33	5	6	6	5.67
17	9	9	9	9	9	8	5	7.33	5	6	6	5.67
18	9	9	9	9	8	8	5	7	5	6	7	6
19	9	9	9	9	8	8	6	7.33	5	6	7	6
20	9	9	9	9	8	8	6	7.33	5	6	7	6
21	9	9	9	9	9	8	6	7.67	5	6	7	6
22	9	9	9	9	9	8	6	7.67	5	6	7	6
23	9	9	9	9	9	8	7	8	5	6	6	5.67
24	9	9	9	9	9	8	7	8	4	6	6	5.33

25	9	9	9	9	9	8	7	8	4	6	6	5.33
26	8	9	9	9	8	8	7	7.67	4	6	6	5.33
27	9	9	9	9	8	8	7	7.67	4	6	6	5.33
28	9	9	9	9	8	8	7	7.67	3	6	6	5
29	9	9	9	9	8	8	7	7.67	3	6	6	5
30	9	9	9	9	8	8	7	7.67	3	6	6	5
31	9	9	9	9	8	8	8	8	3	6	6	5
32	9	9	9	9	8	8	8	8	2	6	6	4.67
33	8	9	9	8.67	8	8	8	8	2	6	6	4.67
34	8	9	9	8.67	9	8	8	8.33	2	6	6	4.67
35	9	9	9	9	9	8	8	8.33	2	6	6	4.67
36	9	9	9	9	8	8	8	8	2	6	6	4.67
37	9	9	9	9	8	8	8	8	2	6	6	4.67
38	9	9	9	9	8	8	8	8	2	6	6	4.67
39	9	9	9	9	8	8	6	7.33	2	6	6	4.67
40	9	9	9	9	8	8	6	7.33	2	6	6	4.67
	TOTAL AVERAGE:			124.7	TOTAL AVEARGE:			140	TOTAL AVERAGE:			176.7

Mouthfeel

R.N	T1				T2				T3			
	R1	R2	R3	Average	R1	R2	R3	Average	R1	R2	R3	Average
1	9	8	9	8.67	9	9	8	8.67	9	9	8	8.67
2	9	8	9	8.67	9	9	8	8.67	9	9	7	8.33
3	9	8	9	8.67	9	8	8	8.33	9	9	7	8.33
4	9	9	9	9	9	8	8	8.33	9	9	7	8.33
5	9	9	9	9	9	8	8	8.33	9	9	7	8.33
6	9	9	9	9	8	8	9	8.33	9	9	7	8.33
7	9	9	9	9	9	8	9	8.67	9	9	7	8.33
8	9	8	9	8.67	9	9	9	9	9	8	7	8
9	9	8	9	8.67	9	9	8	8.67	9	8	7	8
10	9	8	9	8.67	9	9	8	8.67	9	8	4	7
11	9	9	9	9	9	9	8	8.67	9	8	8	8.33
12	9	8	9	8.67	9	9	9	9	9	8	8	8.33
13	9	8	9	8.67	9	9	9	9	9	8	8	8.33
14	9	9	9	9	9	9	9	9	9	9	8	8.67
15	9	9	9	9	9	9	9	9	9	9	8	8.67
16	9	9	9	9	9	9	9	9	9	9	8	8.67
17	9	9	9	9	9	9	9	9	9	9	8	8.67
18	9	8	9	8.67	9	9	9	9	9	9	9	9
19	9	8	9	8.67	9	9	9	9	9	9	9	9
20	9	8	9	8.67	9	9	9	9	9	9	9	9
21	9	9	9	9	9	9	9	9	9	9	9	9
22	9	9	9	9	9	9	9	9	9	9	9	9
23	9	9	9	9	9	9	9	9	9	9	8	8.67
24	9	9	9	9	8	9	9	8.67				

No				Avg				Avg				Avg
25	9	8	9	8.67	8	9	9	8.67	9	9	8	8.67
26	9	8	9	8.67	9	9	9	9	9	9	8	8.67
27	9	8	9	8.67	9	9	9	9	9	9	8	8.67
28	9	8	9	8.67	9	9	9	9	9	9	8	8.67
29	9	9	9	9	8	9	9	8.67	9	9	8	8.67
30	9	9	9	9	8	9	9	8.67	9	9	8	8.67
31	9	9	9	9	9	9	9	9	9	9	8	8.67
32	9	9	9	9	9	9	9	9	9	9	8	8.67
33	9	9	9	9	9	9	9	9	9	9	8	8.67
34	9	9	9	9	9	9	9	9	9	9	8	8.67
35	9	8	9	8.67	9	9	9	9	9	8	8	8.33
36	9	8	9	8.67	9	9	9	9	9	8	8	8.33
37	9	8	9	8.67	9	9	9	9	9	8	8	8.33
38	9	9	9	9	9	9	9	9	9	8	8	8.33
39	9	9	9	9	9	9	9	9	9	5	8	7.33
40	9	9	9	9	9	9	9	9	9	8	8	8.33
	TOTAL AVERAGE:			180.68	TOTAL AVERAGE:			151.31	TOTAL AVERAGE:			122.66

Taste

R.N	T1				T2				T3			
	R1	R2	R3	Average	R1	R2	R3	Average	R1	R2	R3	Average
1	9	9	9	9	9	9	8	8.67	8	7	8	7.67
2	9	9	9	9	9	9	8	8.67	8	7	7	7.33
3	9	9	9	9	9	9	8	8.67	8	7	7	7.33
4	9	9	9	9	9	9	8	8.67	7	7	9	7.67
5	9	9	9	9	9	9	8	8.67	6	7	5	6
6	9	9	9	9	9	9	8	8.67	6	7	5	6
7	9	9	9	9	9	9	8	8.67	7	8	5	5.67
8	9	9	9	9	9	9	8	8.67	7	8	6	7
9	9	9	9	9	9	9	8	8.67	7	8	8	7.67
10	9	9	9	9	9	9	8	8.67	6	8	7	7
11	9	9	9	9	9	9	9	9	6	8	7	7
12	9	9	9	9	9	9	8	8.67	6	8	7	7
13	9	9	9	9	9	9	8	8.67	6	8	7	7
14	9	9	9	9	9	9	8	8.67	6	8	7	7
15	9	9	9	9	9	9	8	8.67	6	8	7	7
16	9	9	9	9	9	8	8	8.33	7	8	7	7.67
17	9	9	9	9	8	8	9	8.33	7	8	7	7.67
18	9	9	9	9	8	8	9	8.33	7	8	7	7.67
19	9	9	9	9	9	8	9	8.67	7	8	7	7.67
20	9	9	9	9	8	8	9	8.33	8	8	6	7.33
21	9	9	9	9	8	8	9	8.33	8	8	6	7.33
22	9	8	9	9	8	8	9	8.33	8	8	6	7.33
23	9	8	9	9	8	9	9	8.67	9	8	5	7.33

24	9	8	9	9	8	9	9	8.67	8	8	5	7
25	9	8	9	9	9	9	9	9	8	7	5	6.67
26	9	9	9	9	9	9	9	9	9	7	5	7
27	9	9	9	9	9	8	9	8.67	9	7	5	7
28	9	9	9	9	8	8	9	8.33	9	7	5	7
29	9	8	9	9	9	9	9	9	5	8	7	6.67
30	9	8	9	9	8	8	9	8.33	9	7	7	7.67
31	9	8	9	9	8	8	9	8.33	7	7	7	7
32	9	8	9	9	8	8	9	8.33	7	7	7	7
33	9	9	9	9	8	8	9	8.33	8	7	7	7.33
34	9	9	9	9	9	8	9	8.67	8	8	7	7.67
35	9	9	9	9	9	8	9	8.67	8	7	7	7.33
36	9	9	9	9	9	8	9	8.67	8	7	8	7.67
37	9	8	9	9	9	8	9	8.67	8	7	8	7.67
38	9	8	9	9	8	8	9	8.67	9	9	8	8.67
39	9	9	9	9	9	8	8	8.67	7	7	8	7.67
40	9	8	9	9	9	8	8	8.67	7	9	8	8
	TOTAL AVERAGE:			151	**TOTAL AVEARGE:**			131.7	**TOTAL AVERAGE:**			131.7

51

Appendix F

DOCUMENTATION

The Researcher picks a one
whole miracle fruit

Finish Product of Miracle Fruit
Ice Cream

Miracle Fruit ice cream process

Survey Time

The Researchers

RESEARCHERS' BIODATA

PERSONAL DATA

Name: Lomon, Danica Myka G.

Date of Birth: July 17, 1999

Place of Birth: Subayon, Bilar, Bohol

Home Address: Subayon, Bilar, Bohol

Citizenship: Filipino

Civil Status: Single

Religion: Roman Catholic

Father: Lomon, Danilo M.

Mother: Lomon, Marcela G.

EDUCATIONAL ATTAINMENT

Elementary: Owac Elementary School

                 Subayon, Bilar, Bohol

Secondary: Bilar National High School

                 : Yanaya, Bilar, Bohol

                 : Bread & Pastry NCII Holder

                 : Food & Beverages NCII Holder

                 : Cookery NCII Holder

Tertiary   : Bohol Island State University- Bilar Campus

                 Zamora, Bilar, Bohol

Course   : Bachelor of Science Industrial Technology

Major   : Food Preparation Service Management

"You are strong. You are beautiful. You are resilient "

RESEARCHERS' BIODATA

PERSONAL DATA

Name: Lontoc, T. Kenneth Jefriel

Date of Birth: August 25, 1999

Place of Birth: Tagbilaran city

Home Address: Zamora Bilar Bohol

Citizenship: Filipino

Civil Status: Single

Religion: Roman Catholic

Father: Nelson Lontoc

Mother: Lucia Lontoc

EDUCATIONAL ATTAINMENT

Elementary: Zamora Elementary School

Zamora Bilar, Bohol

Secondary: Hegina Eliven Academy for Development

Pob. Bilar Bohol

Tertiary: Bohol Island State University- Bilar Campus

Zamora, Bilar, Bohol

Course : Bachelor of Science Industrial Technology

Major : Food Preparation Service Management

"If your mind can conceive, your body can achieve."

RESEARCHERS' BIODATA

PERSONAL DATA

Name: Shara Mae S. Macabudbud

Date of Birth: April 16, 2000

Place of Birth: Tondo Manila Medical Center

Home Address: Janlud Batuan Bohol

Citizenship: Filipino

Civil Status: Single

Religion: Roman Catholic

Father: Sixto Macabudbud

Mother: Adela Macabudbud

EDUCATIONAL ATTAINMENT

Elementary: Janlud Elementary School

Janlud, Batuan, Bohol

Secondary: Batuan, National, High School

Poblacion, Vieja, Batuan Bohol

Tertiary: Bohol Island State University- Bilar Campus

Zamora, Bilar, Bohol

Course: Bachelor of Science Industrial Technology

Major: Food Preparation Service Management

"If your mind can conceive, your body can achieve."

RESEARCHERS' BIODATA

PERSONAL DATA

Name: Samorano, Angelo I.

Date of Birth: May 10, 2000

Place of Birth: Rizal Medical Center, Pasig City

Home Address: Pob. Vieja, Batuan, Bohol

Citizenship: Filipino

Civil Status: Single

Religion: Roman Catholic

Father: Jesus L. Samorano

Mother: Florencia I. Samorano

EDUCATIONAL ATTAINMENT

Elementary: Batuan Central Elementary School

Pob. Sur, Batuan, Bohol

Secondary: Saint Anthony Academy

Poblacion Norte, Batuan, Bohol

Tertiary: Bohol Island State University- Main Campus

Zamora, Bilar, Bohol

Course: Bachelor of Science Industrial Technology

Major: Food Preparation Service Management

"If your mind can conceive, your body can achieve."