

Sensory evaluation of passion fruit (*Passiflora edulis*) jam and ice cream**Johanna Marie A. Lamsis**

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Abstract: Jam and ice cream are mostly eaten as snack or dessert which is a sweetened food. The recommendation of additional of natural flavorings enhances the taste of ice cream and jam. This study was conducted to innovate ice cream and jam flavored with passion fruit pulp. The effects of trials on the sensorial qualities of passion fruit samples in terms of taste, color and texture. To determine the qualities and evaluators acceptability, the passion fruit samples were subjected to sensory evaluation of 70 respondents. The most acceptable passion fruit sample was subjected to microbiological analysis (*coliform count, Escherichia coli and salmonella detection*). The passion fruit was utilized to flavor ice cream and jam that varied on how it was used. Therefore, the study recommends the following: further study on the utilization of passion fruit into other products, pilot commercialization of passion fruit, further study on the shelf life of passion fruit and utilization and recipe innovations on passion fruit.

Keywords: Passion Fruit, Sensorial, Ice cream, Jam

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INTRODUCTION

The backdrop of the study is presented in this chapter. A synopsis of the situation of passion fruit innovation and processing are provided in this section. Included further are the importance of the study which provided for its justification. The objectives, importance, time, and place and the boundaries of the research complete the parts of this chapter.

Healthy diet is defined as a balanced intake of fruits and vegetables that helps reduce the risks of getting an illness. It is a global concern to promote healthy lifestyles, healthy diets wherein promoting increased production of availability, affordability and accessibility for maximum health benefits (Kedari & Khan, 2014).

The Philippines is on the record as the leading exporter of various fruits which lead it to the top 9 among the top 10 major fruit producing countries (Pariona, 2017). Passion fruit (*Passiflora Edulis/Granadilla*), a fruit vine which grows in the tropic, locally known as “*masaphura*” is among the fruits produced in the country with a record of 825,676 million tons of annual production. It grows in any open spaces, back yards and mountains. It has a big possibility in wide engagement in making a sale because of easy cultivation, getting the high important nutrients and accepting the qualities in manufactured outputs.

The yellow passion fruit variety is more adaptable to low elevations but less productive in high altitudes because of its susceptibility to cold weather. Compared to purple variety the fruits are quite larger, weighing 60g each and they are rounded with splotches of yellow spots that turn completely golden yellow when ripe. The juice is sourer while its recoveries are much lesser than those of the purple one. Seeds are brown in color, resistant to leaf spot and wilt, escape the rips damage and tolerant to nematodes (Vaillant, & Jeanton, 2001).

The product development of passion fruit into jam and ice cream can bring economic opportunities to the community residents especially these are saleable products to tourist where

in barangay Ekip is the jump off point of tourists visiting Mt. Purgatory. The product development of passion fruit may satisfy the primary and secondary tourist needs (Bokod Tourism, 2016). Determining the product is most helpful in understanding the needs of product development for tourism economy. In most places, tourist spots are known also for the local products. The success of this study will help the community residents to be known for the product development of passion fruit which is the one town one product program of the Philippines. It is the promotional program of the government.

Objectives of the study

The study generally aimed to develop passion fruit jam and ice cream products using varying pre-treatments, where the most acceptable samples were used to flavor ice cream and jam which were further subjected to consumer acceptability.

Specifically, the study aims to:

1. determine the qualities of passion fruit jam samples in terms of: a. color, b. taste, c. texture
2. determine the qualities of passion fruit ice cream samples in terms of: a. color, b. taste, c. texture
3. determine the degree of acceptability of ice cream and jam flavored with passion fruit samples in terms of: a. color, b. taste, c. texture
4. determine the microbiological characteristics of the most acceptable passion fruit samples in terms of: a. Coliform count, b. E coli, c. Salmonella

METHODOLOGY

Preparation of jam flavored with passion fruit

Jam flavored with passion fruit was cooked by syrup method. The ingredients were passion fruit pulp, sugar, water and vinegar. The passion fruit pulp, water and vinegar were simmered for at least 2-3 minutes to remove the pectin and to soften the fruit pulp. After simmering, the sugar is added and continue simmering for 5-10 minutes to reach the consistency of the smoothness of the jam. After it reached the level point, it was cooled for 1-2 hours and it was transferred to the sterilized glass jar and stored. Simmering the fruit pulp with enough sugar for reasonably reaching the thick consistency and to firmly hold the fruit tissues in position.

Procedure:

1. Fresh mature passion fruits were harvested in the backyards.
2. Passion fruit was washed thoroughly with running water.
3. The fruits were cut into halves and the pulp was scooped with a clean tablespoon and directly put it into the bowl.
4. Measured 2 cups of passion fruit pulp, 165 2 ½ cups of brown sugar, ¼ cup of water and 1 tbsp. of vinegar.
5. Heated the casserole with slow fire.
6. Poured the mixture into the casserole and stirred it using a stainless ladle for 10-15 minutes in a slow fire.
6. Cooled down for 10-20 minutes and transferred to a sterilized glass bottle and store.
7. Preparation of Ice Cream Flavored with Passion Fruit

There are many processes of how ice cream is made in this study. In the preparation of ice cream samples, electric mixer was used. The general steps followed in the preparation of ice cream were as follows: Fresh mature passion fruits were harvested in the backyards, passion fruit was washed thoroughly with running water, passion fruit was cut it into halves, beat the cream and added condensed milk then mix the passion fruit pulp.

Procedure:

1. Fresh mature passion fruits were harvested in the backyards.
2. Passion fruit was washed thoroughly with running water.
3. The fruits were cut into halves and the pulp was scooped with a clean tablespoon and directly put it into the bowl.
4. Measured 2 cups of passion fruit pulp, 1 ½ cup of condensed milk and 1 ½ cup of unflavored ever whip cream.
5. Beat the 1 ½ cup of unflavored cream using electric mixer until foamy and doubled its size.
6. Mix the condensed milk and beat for 1 minute.
7. Passion fruit pulp was added and mixed it thoroughly.
8. Passion fruit ice cream mixture was transferred to the white plastic container and stored it into freezer for 12 hours.

Data analysis

To determine the level of degree of acceptability of ice cream and jam flavored with passion fruit, the process product underwent sensory evaluation for the determination of likeness. There were 70 community respondents who participated in the sensory evaluation at barangay residents. Prospective evaluators were approached & asked for possible participation in the sensory evaluation.

Treatment of Data

The data that were acquire from the sensory evaluation was tabulated, computed and interpreted.

Color

To evaluate the color of passion fruit jam and ice cream, buttercream, ivory, off-white and white will be used. Mode will be used to describe the color of the passion fruit jam and ice cream samples; the following shade of colors will be used to describe the appearance of jam and ice cream flavored with passion fruit.

Taste

On the other hand, mean will be used to describe taste of passion fruit jam and ice cream sample. For taste, the following descriptions and statistical limits will be used for interpretation as presented in Table 5. For the very strong passion fruit flavor, it signifies that the jam and ice cream have a strong passion fruit flavor in terms of taste aside from its ingredients.

Texture

The following descriptions and statistical limit will be used for passion fruit jam and ice cream texture evaluation. The smooth and soft descriptive equivalence is the standard in evaluating ice cream according to Da Silva et al., & Klososki et al., (2020). It is said that the smooth and soft ice cream, it reaches the prerequisite requirement in the acceptance of numerous foodstuffs. The consistency, thickness, fragility, softness and smoothness add value to the food.

RESULTS AND DISCUSSIONS

Qualities of passion fruit jam samples

The qualities of passion fruit samples were determined using sensory evaluation. The qualities considered in the assessment of passion fruit samples were color, taste, texture and overall acceptability.

Color

The qualities of passion fruit samples in terms of color in jam is presented in Table 8. 67 respondents perceived buttercream color, 3 respondents perceived ivory, 0 respondent perceived in off white and white color of passion fruit jam sample. The majority declares that buttercream color is the color of passion fruit jam.

Texture

The passion fruit jam texture reaches the level of very jelly-like and spreadable level in all the trials conducted. The method in cooking to reach the jelly-like and spreadable is to cook in longer time (10-20 minutes) as discussed above.

Taste

The different variations of sugar used in the trials did not affect the strong taste of passion fruit flavor. The quality of the passion fruit used gives emphasis to the taste that's why.

Qualities of passion fruit ice cream samples

Color

The result of the sensory evaluation on the color of passion fruit ice cream sample wherein white color has a rating of 66 from the respondents and 4 respondents rated in color off-white. This represents that the white color of the ice cream flavored with passion fruit was identified.

Texture

The results of the sensory evaluation on the quality of passion fruit ice cream sample in terms of texture is presented in table 12. In all the trials, the texture of passion fruit ice cream sample was perceived as very smooth and soft.

Taste

The consistency of the taste of the passion fruit depends on how the measurement of the ingredients was done. In the process, the condensed milk was measured thoroughly and the measurement of the passion fruit pulp was maintained.

Total coliform count

The coliform count of fresh passion fruit is directly related to the water used and the hygienic conditions practiced during their cultivation, harvesting and post harvesting handling. The amount of total coliform count in fresh passion fruit can cause further contamination and spoilage during storage.

Salmonella detection

The detection of salmonella in food is a significant issue. It is a kind of bacteria that causes salmonellosis, which is the most common form of bacterial food poisoning. Improper food handling often results to this especially in sweet products. Jace (2018) argues that salmonella can be transmitted via food or water. Stomachaches can be caused by fruits washed with contaminated water.

The process of handling the passion fruit samples were taken into consideration wherein proper food handling was applied. Hygiene practices, regular hand washing and good food handling are some measures taken to prevent one from being infected by this kind of bacteria.

In the process of preparing the passion fruit samples, the tools and materials were washed thoroughly and sterilized to avoid contamination. Cooking inadequately and cross contamination usually result in the spreading of salmonella.

Similarly, mishandling and poor hygiene practices like not washing hands properly also contribute to the spread of salmonella in fruits.

E. coli

Improper food handling is often associated with food poisoning. Escherichia coli (*E. coli*) bacteria normally live in the intestines of healthy people and animals, most varieties of *E. coli* are harmless or cause relatively brief diarrhea. But a few strains such as *E. coli* O157:H7, can cause severe abdominal cramps, bloody diarrhea and vomiting (Bintsis, 2017 & Davis, 2017). Escherichia coli in foods is undesirable because it indicates poor hygienic conditions or inadequate handling which could lead to contamination (Center of Food Safety, 2014).

As to the results of the passion fruit samples, all are within the normal limit which is way below the standard. This suggests that the action of passion fruit sample helps keep the number of *E. coli* at an acceptable range.

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