



Daffodil
International
University

Project Report On

Proximate & Sensory Analysis of Prepared Dragon Fruit Jam

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DAFFODIL INTERNATIONAL UNIVERSITY

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LETTER OF TRANSMITAL

Date: 10 November 2021

Dr. Sheikh Mahatabuddin

Assiocate Professor & Head,

Department of Nutrition and Food Engineering (NFE)
Daffodil International University

Subject: **Submission of Project report**

Dear Sir,

With the honor, I would like to inform you that I have completed my thesis report on" **Proximate & sensory analysis of prepared dragon fruit jam** ". I have tried to my level best to prepare the Project Report for consistency with the optimal standard under your valuable direction.

I express my gratitude for your kind supervision and I hope that you will consider all my mistakes generously.

Sincerely Yours

Syed Md. Rokibul Haris

ID: 182-34-785

Department of Nutrition and Food Engineering

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LETTER OF AUTHORIZATION

Date: 10-11-2021

The Head of the Department, Nutrition and Food Engineering
Daffodil International University

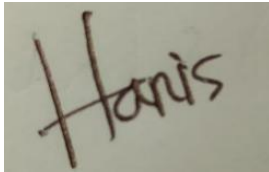
Subject: Submission of Project Report

Dear Sir,

This is my truthful declaration that the “Project Report” I have prepared is not a copy of any thesis report previously made by any other students.

I also express my honest confirmation in support of the fact that the said thesis report has neither been used before to fulfill my other course related nor it will be submitted to any other person or authority in future.

Sincerely Yours



.....
Syed Md. Rokibul Haris

ID: 182-34-785

Department of Nutrition and Food Engineering
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Certificate of Approval

I certify that the project report on "**Proximate & Sensory analysis of prepared dragon fruit jam**" conducted by Syed Md. Rokibul Haris, **ID: 182-34-785**, Department of Nutrition and Food Engineering, Faculty of Allied Health Sciences, Daffodil International University has been approved for presentation and defense for the academic degree.

Syed Md. Rokibul Haris bears a solid good character and an extremely satisfying identity. It has in fact been an extraordinary delight working with him.

I wish him all the success in his future life.



Dr. Sheikh Mahatabuddin
Associate Professor & Head,
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Dr. Nizam Uddin
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Acknowledgement:

First and foremost, praises and thanks to the Almighty, for his showers of blessing at some point of my research work to complete the research successfully. I would like to categorically express my deep and sincere gratitude to my research **supervisor Dr. Nizam Uddin, Assistant Professor** of Department of Nutrition and Food Engineering, Daffodils International University for giving me the probability to do lookup and imparting useful guidance at some stage in this research. His dynamism, vision, sincerity and motivation have deeply stimulated me. He has taught me the methodology to lift out the research and to existing the research works as visibly as possible. It was once an amazing privilege and honor to work and learn about under his guidance.

My deep gratitude & honest thanks to the honorable Head of the department, Associate professor Dr. Sheikh Mahatabuddin, for his kind cooperation & encouragement to accept this degree.

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Also, thanks to all my buddies who constantly stimulated me for top consequences and continually supported me in true work.

Dedication

Dedicated to beloved parents

&

My Honorable

Teachers & to my well

Wishers.

Abstract:

Now a days dragon fruit is most popular fruit in our country. The demind of dragon fruit increase day by day. Now some farmers commercially planted dragon fruit tree and sell it reasonable good price.

Most of the dragon fruit wasted due to preservation. So if we convert it into other products or innovative product, then we can properly use of this food.that's why, I want to make dragon fruit jam.

Most of the people like children, younger boyes & girls oldest person want to eat something different food iteam in their breakfast or snacks. So this dragon fruit jam may be full fill their demand.

Dragon fruit jam has naturally different attractive flavour & colour, taste. So every people want to taste of this food product.

Nutritional value of dragon fruit is very high.They also get good nutrients for their healthy body.

Keywords: Dragon fruit Jam, Proximate analysis, Sensory Analysis.

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Chapter One: Introduction

1.1 Introduction:

Dragon fruits additionally recognized as pitahaya or strawberry pear are a frequent and some famous fruits in Bangladesh proper now. White and red are the major two kinds of dragon fruits. Though dragon fruits are on hand from June to September, the main season is August and September. The amazing food energy and special seem to be makes it so famous to fitness aware people.



Figure 1: Dragon Fruit Tree.

1.2 Objective of the Study:

1. To making dragon fruit jam & find out unique information about dragon fruit jam.
2. To know about nutritional fact of dragon fruit jam.
3. To create scope to develop a new product.
4. For proximate & sensory analysis of dragon fruit jam.



Figure 2: Dragon Fruit

1.3 Nutritional Value of Dragon Fruit:

Dragon fruit like a super food. It's containing small amount of several nutrients.

Here is the nutrition fact for per 100 gram of dragon fruit pulp:

Table No.01: Nutritional Value of dragon fruit jam (Source: SONAWANE, 2017)

Nutrients	Amount per 100gram
Water	87g
Protein	1.1g
Fat	0.4g
Carbohydrates	11.0g
Fiber	3g
Vitamin B1(Thiamine)	0.04mg
Vitamin B2(Riboflavin)	0.05mg
Vitamin B3(Niacin)	0.16mg
Vitamin C (Ascorbic Acid)	20.5mg
Calcium (Ca)	8.5mg
Iron (Fe)	1.9mg
Phosphorus(P)	22.5mg

1.4 Dragon Fruit Health Benefits:

1. Dragon fruit is low in calories but high in many important nutrients.
2. It has lots of high in antioxidants which help to reduced risk of chronic disease.
3. Promote the growth of healthy bacteria in our gut, which helpful to our body.
4. Make your immunity system strong.
5. Good Sources of calcium, Iron & phosphorus.
6. Dragon fruit have naturally fat free & high in fiber.



Figure 3 : Dragon Fruit

Chapter Two

Materials & Method

2.1 Collection of Raw Materials:

I had collected dragon fruit from local market of Dhaka city. I was trying to buy best quality of dragon fruit for making my dragon fruit jam.

2.2 Ingredients used in Dragon fruit Jam:

1. Dragon Fruit Pulp= 695 gm
2. Sugar= 350 gm
3. Citric Acid = 0.5 gm
4. Pectin= 7 gm
5. KMS= 0.5 gm

2.3 Apparatus & Equipment:

1. Saucepan
2. Digital balance
3. Spoon
4. knife
5. Gas stove for heating.
6. Beaker
7. Sterilized Glass Jar.

2.4 Dragon Fruit Jam Making Procedure:

1. At First wash properly the dragon fruit with water. Peel & cut it.



Figure 4 : Dragon Fruit

2. Then collected the pulp of dragon fruit & weight it through digital balance.



Figure 5: Dragon Fruit Pulp.

3. After that make it small pieces through the knife and put into saucepan.



Figure 6: dragon fruit pulp in Saucepan.

4. Now start heating by gas stove & cook it medium flame and stir it for batter mixing or combined.
5. When dragon fruit pulp release water or looks like juicy then added sugar and keep it stirring.
6. After that cook it for 20 minutes.
7. Once you notice that, it has begun to thicken then add citric acid and keep on stirring.
8. After few minutes later added pectin & after that added KMS.
9. When the mixture has thickened, remove from heat and let it cool.



Figure 7: Dragon Fruit Jam

10. Now store it in a sterilized glass jar in refrigeration.



Figure 8: Dragon fruit Jam in Sterilized Glass Jar

Chapter Three

Proximate Analysis

3.1 Determination of PH:

Basically, PH play an important role in food preservation. Controlling Ph range, we can preserve our foods for long time.

By the help of PH meter, we can measure the PH of foods. PH meter helps us to know, is our products acidity or basic/alkalinity.

To measure ph., at first, we must calibration our PH meter through buffer solution. After calibration, take sample in baker, & see the PH range by PH meter.



Figure 9: PH meter

3.2 Determination of Degree Brix:

The degree brix measured by a hand refractometer. When light enters in a liquid the light trade its direction, which is recognized as reflection. The refractometer measures the degree at which mild changes direction. Refractometer can the refraction angles and compares them the refractive index of end value that have been shown. Give Sample on the refractometer and after that hand refractometer records the reading.



Figure 10: Hand Refractometer

3.3 Determination of Moisture:

To determination of dragon fruit jam moisture, I used digital moisture machine. At first take

2 gm sample in digital moisture machine, then wait for few minutes. After that, we will get the value of moisture and record or note the Value of moistures



Figure 11: Digital Moisture Machine

3.4 Determination of Ash:

Ash determines the inorganic residue remaining after the ignition of organic matter in a food sample.

Apparatus:

1. Electric muffle furnace.
2. Digital Balance meter.
3. Crucible lid
4. Spatula
5. Deducator
6. Hand gloves.

Sample: Dragon fruit jam (2gm)

Procedure:

1. At first preheat the empty crucible. Then weight empty the crucible (W1)

2. take 2gm sample into crucible and close by lid (W2).

3. Place sample with crucible(W2) into muffle furnace at 600°C for 6 hours.



Figure 12: Electric Muffle Furnace

4. After 6 hours, the crucible has taken out for cooling into desiccator.
5. After cooling the weight of the crucible (W3) again.
6. Now calculated it.

Calculation:

W1= Empty crucible weight

W2= Crucible with sample weight

W3= After Cooling Crucible weight

$$\text{Ash\%} = \{(W3-W1) \div (W2-W1)\} \times 100$$

3.5 Determination of Protein:

The Kjeld Hal method have 3 steps. They are following:

1. Digestion of sample.
2. Distillation
3. Titration

Digestion of Sample:

1. Around 0.4gm of sample was once taken into digestion flask and 10 ml of H₂SO₄ was once brought into it.
2. Then 2gm of digestion combination was once taken into the Kjeldahl flask.

3. The flask is then heated in a kjeldahl digestion chamber at a temperature of 40 °C at the beginning. Let the temperature extend to 65 °C and heated for 4-5 hours or till the answer grows to be colorless.



Figure 13: Digestion flask heated in a kjeldahl digestion chamber.

4. Then the flasks have been cooled and transferred to a volumetric flask and made the volume 100 ml with distilled water.

Distillation:

1. 10 ml of solution was once taken into a distillation flask. Then introduced 150 ml distilled water, 10 ml of 40% NaOH into the flask.

2. Heated the flask at 60-75 °C temperatures for 30 minutes. Collect the nitrogen with the aid of trapping flasks with 10 ml of 0.1m HCL solutions and 1-2 drops methyl red solution.



Figure 14: Distillation Camper.

3. After finishing the distillation the trapping flask was once removed and titrated with NaOH.

Titration:

titrate the distillate with 0.1N of NaOH until color change to light yellow.

Calculation:

$$\text{Protein \%} = \{(B-S) \times 1.4 \times 10 \times 5.95 \times 0.1 \div 1000 \times 0.4\} \times 100$$

Where,

B= Titration Value of Blank.

S= Titration value of sample.

Value of Liquid sample =10 ml

Molar mass of Nitrogen= 1.4

Nitrogen factor for fruits= 5.95

Strength of NaOH= 0.1

3.6: Determination of Fat:

Apparatus:

- 1.Weight Machine
2. Crucible lid
3. Soxhlet Apparatus.

Chemical:

Petroleum Ether or N-Hexane.

Procedure:

1. At first weight empty thimble.
2. Then weight 5 gm of sample and place it in thimble.
3. Take a 150ml round bottom flask and fill with 90ml petroleum ether.
4. Place the whole setting on a heating mantle and allow the petroleum ether to boil.
And also set up condenser water line.
5. This process almost taken 6 hours.
6. After 6 hours stop this process.
7. Place the sample in oven. After that, removing it, take place in the desiccator
8. After that, Take the weight of the sample.
9. Now calculated it.



Figure 15: Soxhlet Apparatus

Calculation:

Empty thimble =W1

Thimble with sample =W2

Weight of sample=P

$$\text{Fat\%} = \{(W2-W1) \div P\} \times 100$$

3.7 Total Carbohydrate:

This is measured by subtract method as bellow,

$$\% \text{ Total Carbohydrate} = 100 - (\text{Protein} + \text{Fat} + \text{Moisture} + \text{Ash})$$

Chapter Four

Result & Discussion.

Result & Discussion:

4.1 Physical Characteristics of dragon fruit jam:

Physical Characteristics also analyzed of dragon fruit jam. The degree brix of dragon fruit jam 68% and PH of dragon fruit jam, 4.6

Table 02: Physical Characteristics of dragon fruit jam:

Parameters	Value/Result
PH	4.6
°Brix	68%

4.2 Proximate Composition of Dragon Fruit Jam:

Proximate composition of dragon fruit jam have shown below,

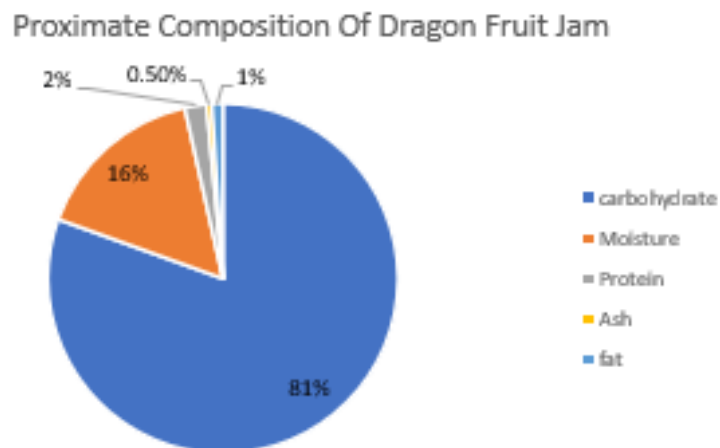


Figure 16 : Proximate Composition of dragon fruit Jam

Carbohydrate: Carbohydrate of dragon fruit was 80.50%

Moisture content: moisture of dragon fruit jam 16%

Ash content: ash content of dragon fruit jam 0.5%. Its one of most important elements of food.

Fat content: dragon fruit jam has low in fat. Almost 1% fat.

Protein content: Protein content of dragon fruit jam was almost 2%

4.3 Sensory Perception:

In our Daffodil Smart City area, I conducted a sensory perception of my dragon fruit jam (participate 20 persons). This is done through 9 scale hedonic Test.

Like extremely=70%

Like moderately=10%

Neither like or dislike=10%

Slightly dislike= 5%

Dislike=5%

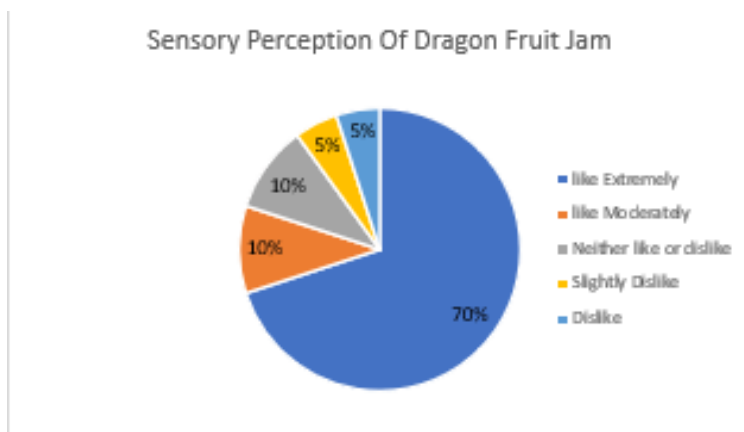


Figure 17: Sensory Perception of Dragon Fruit Jam

Chapter Five

Conclusion & Reference

5.1 Conclusion:

I think, about 80% peoples like dragon fruit jam. They took it positively. Thank you my supervisor Dr. Nizam Uddin, Assistant Professor of Nutrition and Food Engineering (NFE) Department. Without your Guild line, I couldn't complete my project work.

To doing this project work, I have gained lots of knowledge in real life, like how to proximate & sensory analysis of own food product.

At last, in one word, this project experience helps me to get success in my future.

5.2 Reference:

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