



**A Project Work  
on  
“Studies of Sensory Characteristics on Instant Powder Drink Developed  
with Dry Date Fruits”**

**Submitted To:**

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**Date of Submission:**

**21<sup>th</sup> May, 2019**



## Letter of Transmittal

21<sup>th</sup> May, 2019

Professor Dr .Md. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Faculty of Allied Health Sciences

Daffodil International University

**Subject: Submission of Project Report**

Dear Sir,

With respect, I would like to inform you that I have completed my project report on “**Studies of Sensory Characteristics on Instant Powder Drink Developed with Dry Date Fruits**”. I have tried to my level best to focus the project report for consistency with the optimal standard under your valuable direction.

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

Sincerely yours,

.....

**Md. Muhaiminul Islam**

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## Letter of Authorization

Date: 21 May 2019

To

Professor Dr. Md. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Daffodil International University

**Subject: Declaration regarding validity of the Project Report**

Dear Sir,

I would like to inform you 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 to the fact that the said project report has neither been used before to fulfill my other course nor it will be submitted to any other authority in future.

Sincerely Yours,

-----

Md Muhaiminul Islam

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## Certificate of Approval

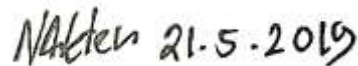
I am satisfied to certify that the project report on “**Studies of Sensory Characteristics on Instant Powder Drink Developed with Dry Date Fruits**” conducted by Md. Muhaiminul Islam carrying ID: 161-34-500, Department of Nutrition and Food Engineering, has been approved for presentation and defense for the academic degree.

Md. Muhaiminul Islam bears a strong moral character and an extremely satisfying identity. It has in fact been an extraordinary delight working with him. I wish him all achievement in life.



.....

**Professor Dr .Md. Bellal Hossain**  
**Head**  
Department of Nutrition and Food  
Engineering  
Faculty of Allied Health Sciences  
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.....

**Ms. Nasima Akter Mukta**  
**Supervisor, Lecturer**  
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Daffodil International University



## Acknowledgement:

First of All, I would like to express my deepest gratitude to Almighty Allah for giving me the strength & the composure to complete the project report.

I am grateful to my parents without whom I cannot be here. Without the support of my parents, I could not be able to achieve my objectives and goals.

I would like to express my gratitude to **Professor. Dr. Md. Bellal Hossain**, Head of the Dept. of Nutrition and Food Engineering, Daffodil International University for creating this enormous scope of practical knowledge in the curriculum and providing me valuable guidance to complete my work.

I am deeply indebted to my Supervisor, **Ms. Nasima Akter Mukta, Lecturer**, Department of Nutrition and Food Engineering, Daffodil International University for her whole-hearted supervision during my organizational attachment period. It would have been very difficult to prepare this report up to this mark without her guidance.

I would like to express my warmest thanks to NFE Faculty members for their countless inspiration and encouragement during my student life.



**Dedication:**

***THE PROJECT REPORT  
IS DEDICATED  
TO  
MY BELOVED PARENTS***



## **Abstract**

This study aimed to develop Instant powder drink with dry date fruits and to specify its quality parameter by organoleptic analysis followed by statistical analysis. Products were developed with variable wt% of dry date powder as 10 wt% (Sample-1), 15 wt% (Sample-2) and 20 wt% (Sample 3) along with glucose powder, citric acid, salt, and sugar. Sensory evaluation of the developed products were carried out by 30 panelist on a nine-point hedonic scale for different sensory parameters such as- appearance, flavor, taste, texture and overall acceptability. Obtained experimental values from duplicate measurements were subjected to statistical analysis for mean. Mean value of sensory attributes like overall as consumer preference of three samples showed that overall acceptance of sample 1 is more than other two samples. Lower mean for overall acceptance was observed in case of sample 2. In quality parameter test Sample-1 and Sample-3 showed more preferable and approved to be the better in all sensory attributes by the panelists. The study also revealed that Sample-1 was more acceptable than other samples which contained less w% of dry fruits.



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# CHAPTER-01

## Introduction

### 1.1 Introduction:

Date powder is a natural sweetener made from finely chopped, dried dates which are ground into a coarse, granular powder. Date powder is brown in color and sweet – similar to that of brown sugar. Because the entire fruit is used to make the powder, this sweetener is jam packed with dietary fiber. This is unlike regular sugar, which is highly processed and devoid of much nutritional benefit.

Since date powder is simply ground whole dates, all of the nutritional benefits of the fruit are retained to make one exceptional sweetener. The powder is rich in potassium, magnesium, and copper, and is a good source of moderate amounts of iron, calcium, phosphorus, niacin, and pyridoxine. In addition, dates are a proven source of antioxidants with strong antioxidant effects. Date powder is high in beta-carotene, lutein, and zeaxanthin, all especially protective for your eyes. Date powder scored the highest in antioxidant content than any other sugar, even compared to honey and maple syrup.

Dates contain at least six vitamins including a small amount of vitamin C, and vitamins B1 thiamine, B2 riboflavin, nicotinic acid (niacin) and vitamin A. The dietary fiber of 14 varieties of dates has been shown to be as high as 6.4-11.5% depending on variety and degree of ripeness. Dates contain 0.5-3.9% pectin, which may have important health benefits. The world production of dates has increased 2.9 times over 40 years, whereas the world population has doubled. The total world export of dates increased by 1.71% over 40 years. In many ways, dates may be considered as an almost ideal food, providing a wide range of essential nutrients and potential health benefits.<sup>[1]</sup>



## **1.2 Purpose of this Study:**

The main purpose of this study that--

- To know about Instant powder drink
- To create scope to develop a new product
- To finding the results of this study
- To know about nutritional facts of dates instant powder drink
- To know about Health benefit of dates instant powder drink
- To know about the processing methods of instant powder drink standardization during product development
- To evaluate the sample of dates instant powder drinks
- For Self-development

## **1.3 Color, Flavor and Size of dates fruits:**

Date fruits are nutritious than other dry fruit .There are lots of various dates fruits available in market. Generally ripe dates has varied in size and shape.

## **1.4 Uses of dates Powder:**

Its 100% dry dates from of a fine powder .it is an excellent substitute for sugar to giving sweetness to other foods. It can be used in cheer, milk, sheered, even partly mixed in cake & cookies dough.

## **1.5 Nutritional value of dates fruit:**

Date fruits assume great important in human nutrition owing to their rich content of essential nutrients which include carbohydrates, vitamin, dietary fiber, minerals and few amount protein. The nutrition value of dry date fruits is higher sucrose content, potassium, calcium, magnesium and Iron as well as vitamins (B1, B2) and Niacin. The Water content of date fruit is between 7% (dried) & 79% (fresh) depending on variety .Dried dates can easily be stored & preserved because of their naturally high sugar content.<sup>[2]</sup>



## **CHAPTER-02**

### **Materials & Methods:**

#### **2.1 Materials and Methods:**

The study was conducted in the NFE Food processing & Analytical Laboratory of Daffodil International University, Dhaka

#### **2.2 Collection of Raw Materials:**

The fresh and Dry dates fruits was collected from the super shop such as- mina bazar, agora etc. The powder of Dry date's fruits was used to prepare for Instant powder drinks.

#### **2.3 Chemicals and Ingredients used in product development:**

- ✓ Citric acid
- ✓ Yellow food color
- ✓ Salt
- ✓ Treated water
- ✓ Glucose powder
- ✓ Sugar

The zipper bag were use in the Dry date Instant powder drinks.

#### **2.4 Preparation of Instant powder drinks:**

The study of the development of instant powder drinks was made using the following equipment's, Ingredients and utensil.



## **2.5 Apparatus and Equipment:**

The following Apparatus & Equipment Required for Product development .such as—

- 1) Blender Machine
- 2) Oven
- 3) Digital Balance
- 4) Desiccators
- 5) Conical flask
- 6) Measuring flask
- 7) Spoon
- 8) Tray
- 9) Foil paper
- 10) Beaker
- 11) Crucible
- 12) desiccator
- 13) Knife
- 14) Chopping board
- 15) Zipper bag

## **2.6 Preparation of Instant powder drinks:**

Instant powder drinks were prepared by the following steps:

1. Around 500 g of Dates dry fruits were cleaned and dried by sun drying method for 4-5 days and the weight measured after drying as 350 g
2. Dried date fruits in then made into small pieces and grinded to make it homogeneous powder which was measured as 250gm.





**Figure 2.6.1: Date powder on plate**

## **2.7 Steps of Raw materials to dates powder:**

Fruits were selected by considering several requirements such as:

- ✓ Color
- ✓ Texture
- ✓ Stage of maturity
- ✓ Identify the damage fruits
- ✓ Findings the insect infestation

## **2.8 Cutting and Separation from seed:**

Outer layer of date's fruits were separated from date's seed by knife and made into small pieces, then placed in a clean tray.

## **2.9 Drying of date fruits:**

The sun drying methods used for drying of dates (keep it for 4-5 days).

## 2.10 Preparation of Date powder:

A Blender Machine used to make it powder from dry dates fruits. Homogeneous powder form can be made by blending several times. Plastic sieve was used to separate the big particles from powder and then packaged the powder into the zipper bag.



**Figure 2.10.1: preparation of date powder by Mix Grinder [8]**

## 2.11 Preparation of Date Instant powder Drinks:

Three samples of instant powder drink were developed by mixing varying wt% of date powder as 10% (for Sample 1), 15% (for Sample 2) and 20% (for Sample 3) along with 72% glucose powder, 1.5 % citric acid, 1.5 % salt, and 15% sugar. Composition of the developed samples are showed in a Table-1 below:

Sample-01		Sample-02		Sample-03	
Ingredients	Percentage	Ingredients	Percentage	Ingredients	Percentage
Dates powder	10%	Dates powder	15%	Dates powder	20%
Glucose powder	72%	Glucose powder	72%	Glucose powder	72%
Sugar	15%	Sugar	15%	Sugar	15%
Citric acid	1.5	Citric acid	1.5%	Citric acid	1.5%
Salt	1.5	Salt	1.5%	Salt	1.5%
Yellow Color	1-drop	Yellow Color	1-drop	Yellow Color	1-drop

**Table-1:** Composition of the developed three samples

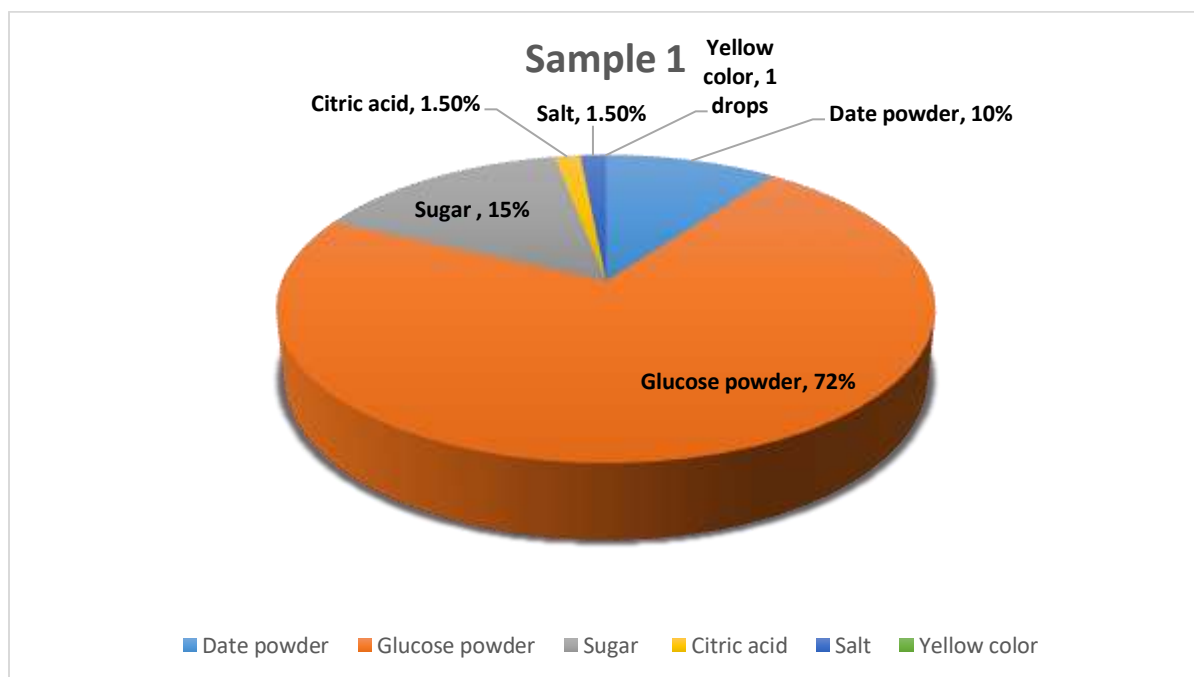




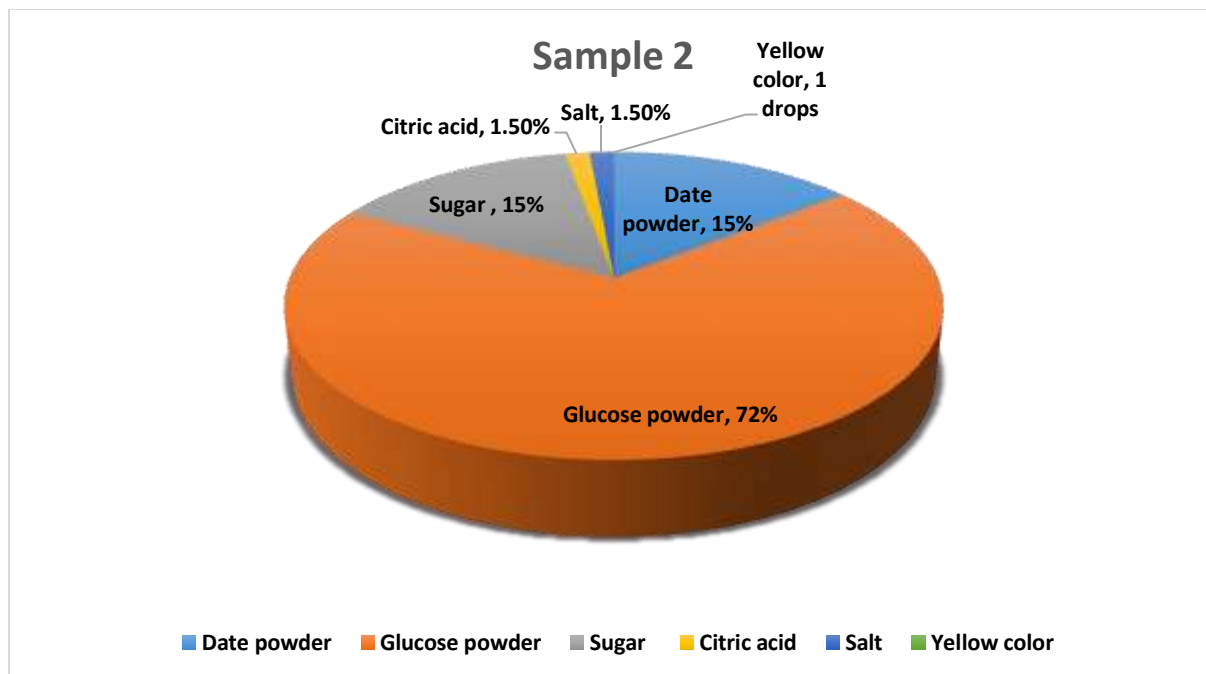


**Figure 2.11.1: After blending of three sample**

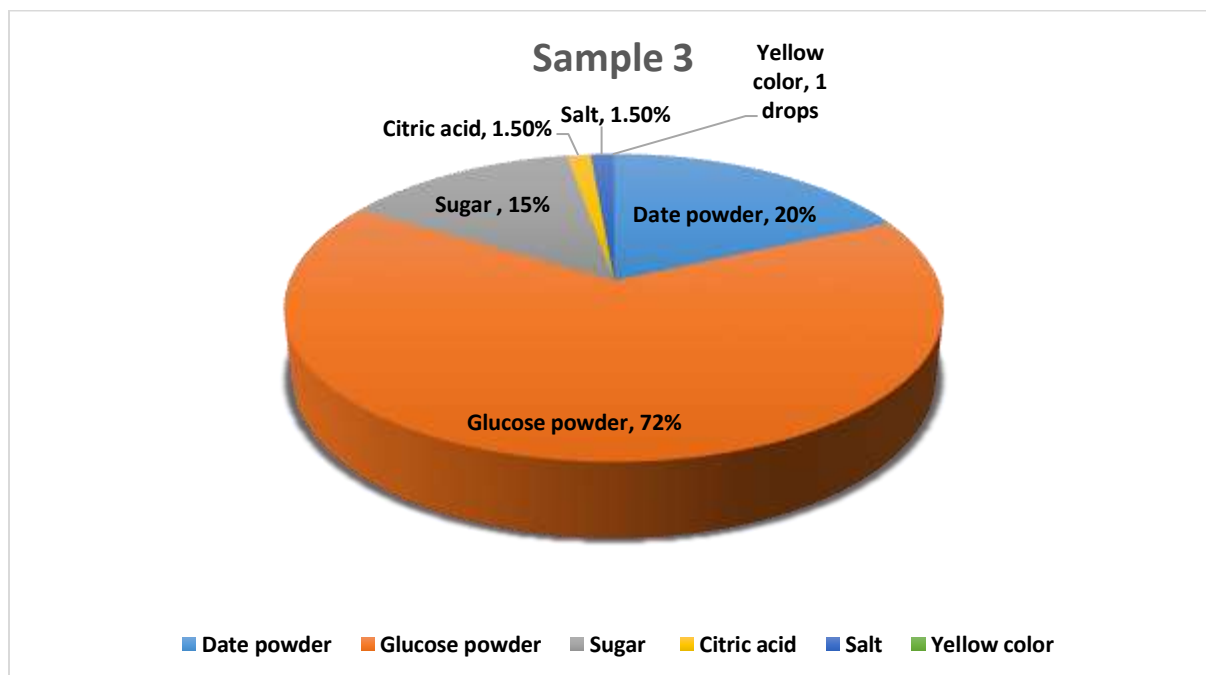
## 2.12 Composition of IPD from Date fruits



**Figure 2.12.1:** In this pie-graph showed that, the used percentage of Date powder is 10% with 15% sugar & other Ingredients.

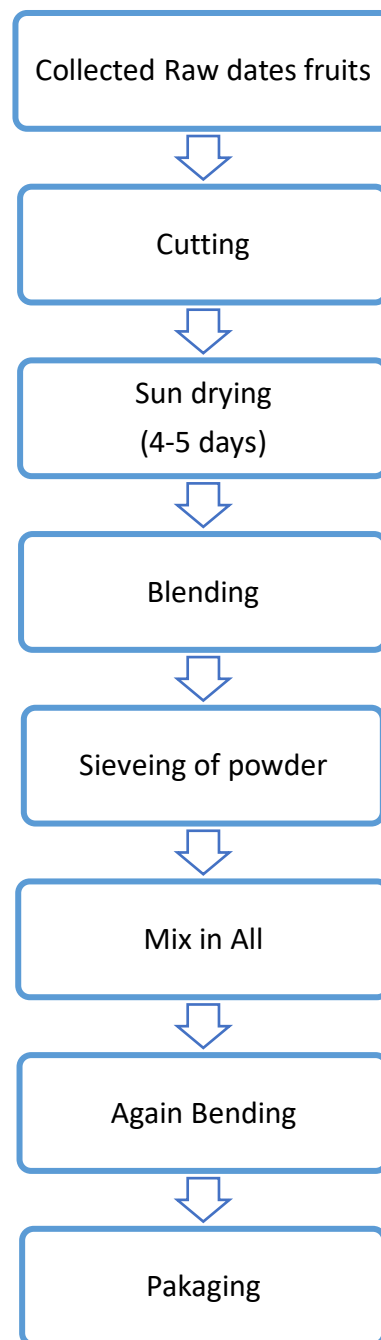


**Figure 2.12.2:** In this pie-graph showed that, the used percentage of Date powder is 15% with sugar & Other Ingredients.



**Figure 2.12.3:** In this pie-graph showed that, the used percentage of Date powder is 20% with 15% Sugar and Other Ingredients.

### 2.13 Process Diagram of Date Instant Powder Drinks:



## CHAPTER-03

### Sensory Evaluation & Statistical Analysis

#### 3.1 Sensory Evaluation of date Instant powder drinks:

Sensory Evaluation is an important Evaluation methods for date instant powder drinks. I have prepared three sample of date instant powder. There are three sample is 25 grams.

The main parameter of sensory Evaluation for dry date powder is that hedonic test.

#### 3.2 Hedonic test:

I have conducted a survey among 30 staffs of Daffodil International University.

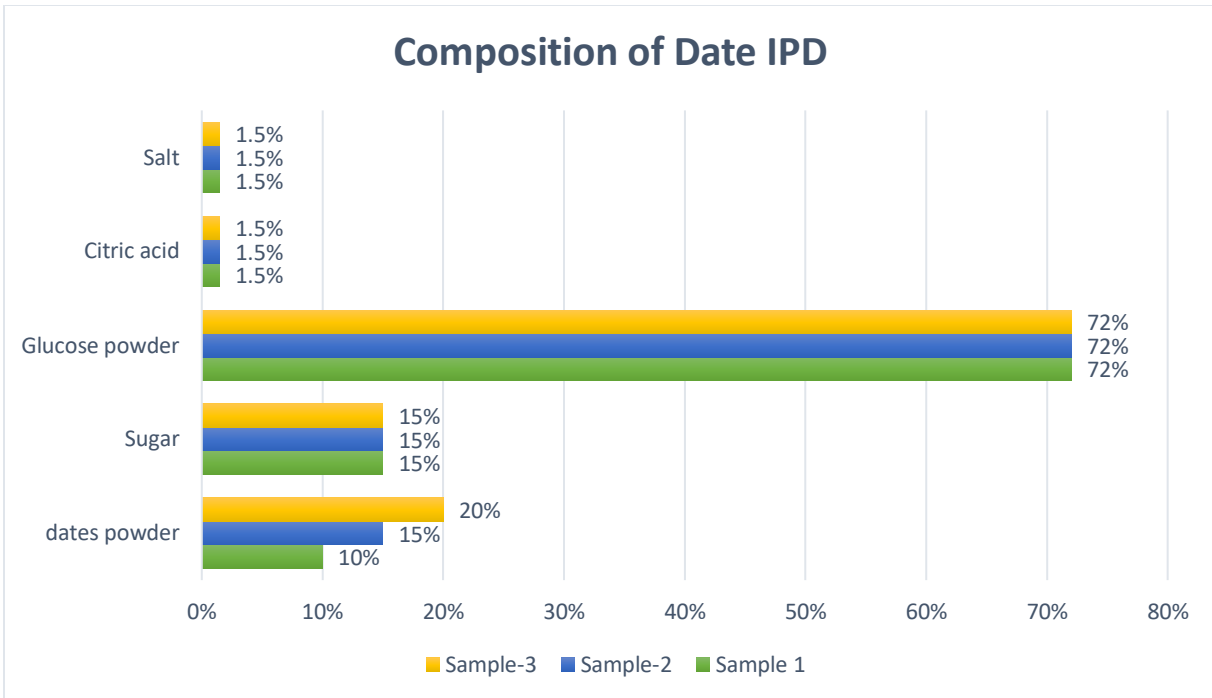
Total data are submitted below:

Name:		Products: Date Fruit Instant powder drinks
Panelist:	30	
Date:	27/4/2019	
<b><u>Instructions:</u></b> Taste the given samples, the place a (✓) mark on the point in the scale which best describes your feeling.		



SANOLE CODE										
SCORE	Sample No-01					Sample No-02				
	<i>Color</i>	<i>Texture</i>	<i>Taste</i>	<i>flavor</i>	<i>Over all Acceptable</i>	<i>Color</i>	<i>texture</i>	<i>taste</i>	<i>flavors</i>	<i>Over all Acceptable</i>
(9)like Extremely	7	10	12	8	10					
(8)like very much	12	15	9	10	12	5	3	1	8	4
(7) like Moderately	8	3	8	5	6	6	2	2	9	4
(6)like Slightly	3	2	1	6	2	4	2	8	7	5
(5)Neither like Nor Dislike				1		8	11	12	6	9
(4) Dislike Slightly						7	12	7		8
(3)Dislike Moderately										
(2)Dislike very much										
(1)Dislike Extremely										
	Sample No-03					<b>IPD=Instant powder drinks (dry dates fruit)</b>  <b>9 = like extremely</b>  <b>8 = like very much</b>  <b>7 = like moderately</b>  <b>6 = like slightly</b>  <b>5 = neither like or dislike</b>  <b>4 = dislike slightly</b>  <b>3 = dislike moderately</b>  <b>2 = dislike very much</b>  <b>1 = dislike extremely</b>				
	<i>Color</i>	<i>Texture</i>	<i>Taste</i>	<i>flavor</i>	<i>Over all Acceptable</i>					
(9)like Extremely	6	7	9	8	7					
(8)like very much	10	12	11	15	12					
(7) like Moderately	9	6	5	4	6					
(6)like Slightly	5	4	4	3	5					
(5)Neither like Nor Dislike		1	1							
(4) Dislike Slightly										
(3)Dislike Moderately										
(2)Dislike very much										
(1)Dislike Extremely										





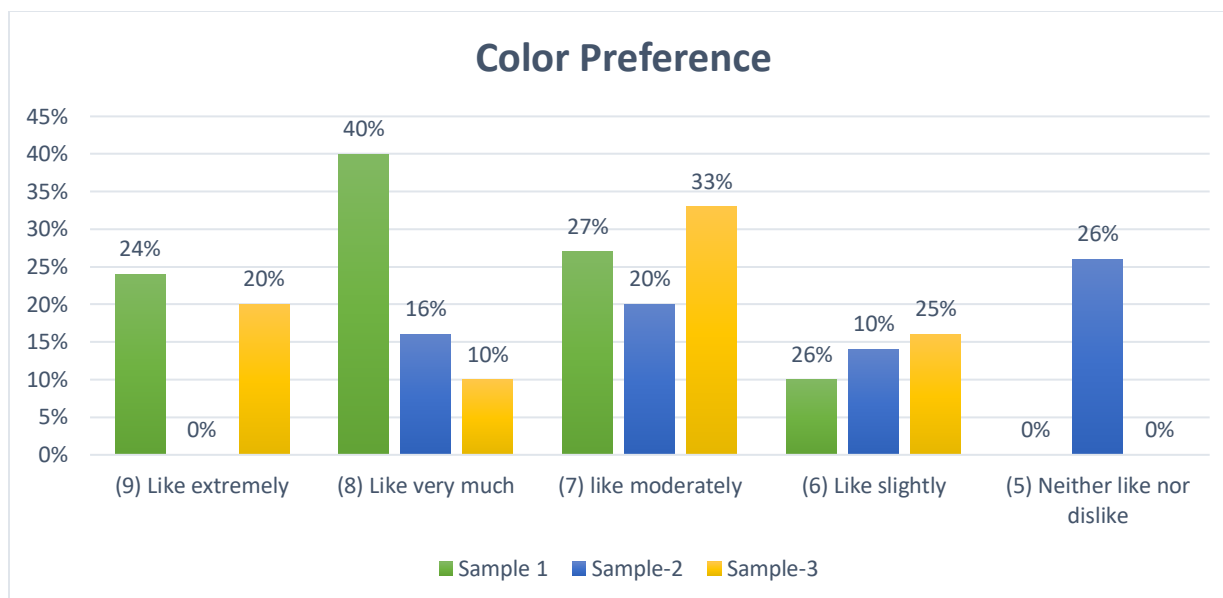
**Figure 3.2.1:** Composition of percentage of date Instant powder drinks

**Total Respondent = 30**

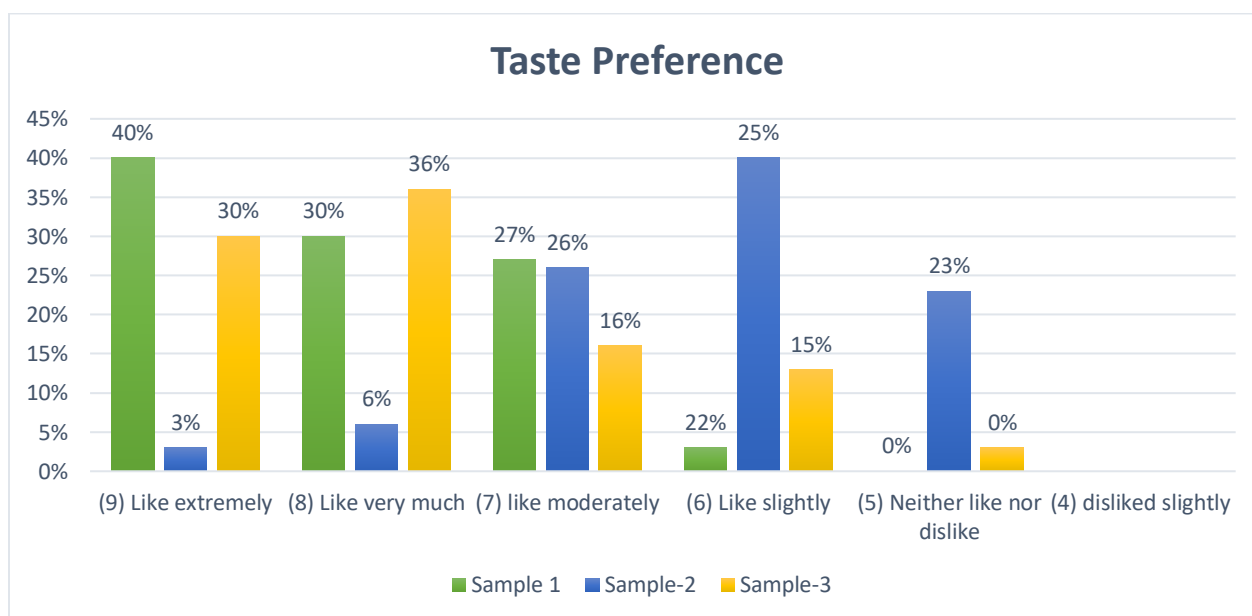
In Sample-1 Used 10% of dates powder with 15% Sugar, 72% Glucose powder, citric acid 1.5% & salt 1.5%

In Sample-2 Used 15% of dates powder with 15% Sugar, 72% Glucose powder, citric acid 1.5% & salt 1.5%

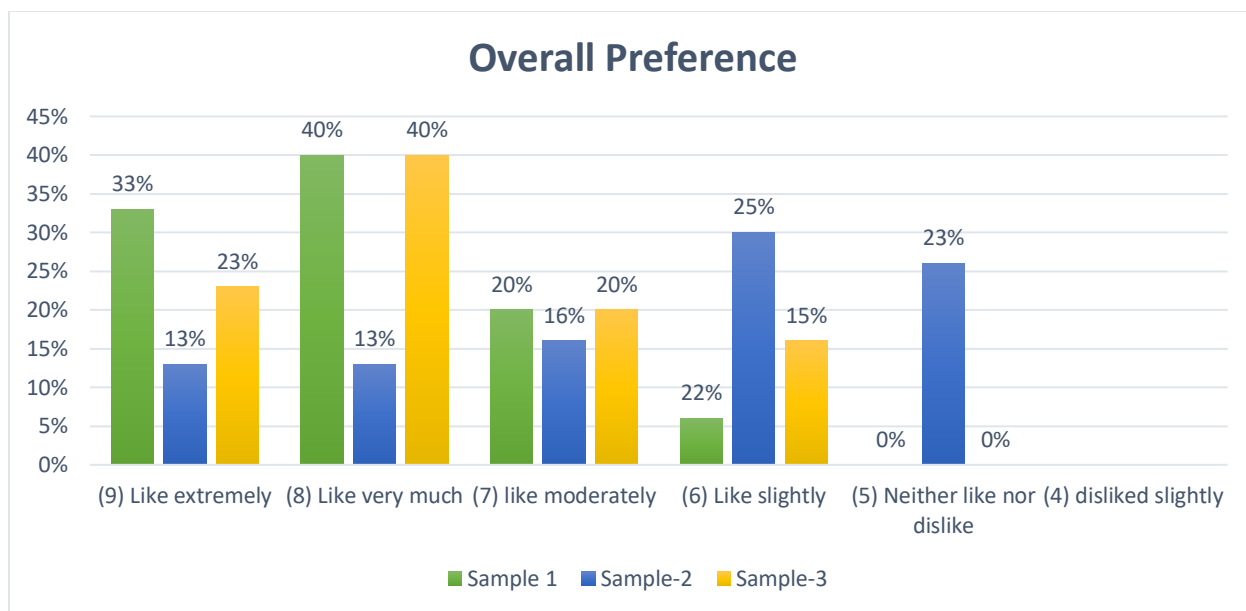
In Sample-3 Used 20% of dates powder with 15% Sugar, 72% Glucose powder, citric acid 1.5% & salt 1.5%



**Figure 3.2.2:** Shows the color attributes of Dates instant powder drinks in bar chart in 9 point hedonic scale. The bars showed that sample-1 contains 10% dates powder with 15% sugar got the highest score as liked very much & sample-3 contains 20% with 15% sugar got same highest score like sample-1



**Figure 3.2.3:** Shows the taste attributes of Dates instant powder drinks in bar chart in 9 point hedonic scale. The bars showed that sample-1 contains 10% dates powder with 15% sugar got the highest score as liked very much & sample-3 contains 20% with 15% sugar got highest score as Liked extremely than Sample 1 & 2.



**Figure 3.2.4:** Shows the appearance attributes of Dates instant powder drinks in bar chart in 9 point hedonic scale. The bars showed that Overall Acceptance of sample-1 got 33% as Line Extremely than Other sample.

### 3.3 Statistical Analysis of data:

The sensory analysis was statistically analyzed. Results were expressed as mean value. The statistical analysis of data was determined using Microsoft Excel software (Microsoft Corporation).

The Sensory evaluation of the developed products were carried out by 30 panelist on a nine-point hedonic scale for different sensory parameters such as- appearance, flavor, taste, texture and overall acceptability. Obtained experimental values from duplicate measurements were subjected to statistical analysis for mean value.



**Mean:** The “average” Number found by adding all data points & dividing by the number of data points.

**Formula of Mean:**

$$= \frac{\text{sum of all data values}}{\text{Number of data values}}$$

$$= \frac{63+96+56+18}{30}$$

$$= \frac{233}{30}$$

$$= 7.76$$

Mean value of sample: 7.76



## CHAPTER-04

### Results & Discussions

#### 4.1 Results:

Mean ratings for consumer acceptance of different attributes of date powder IPD are computed in Table 2

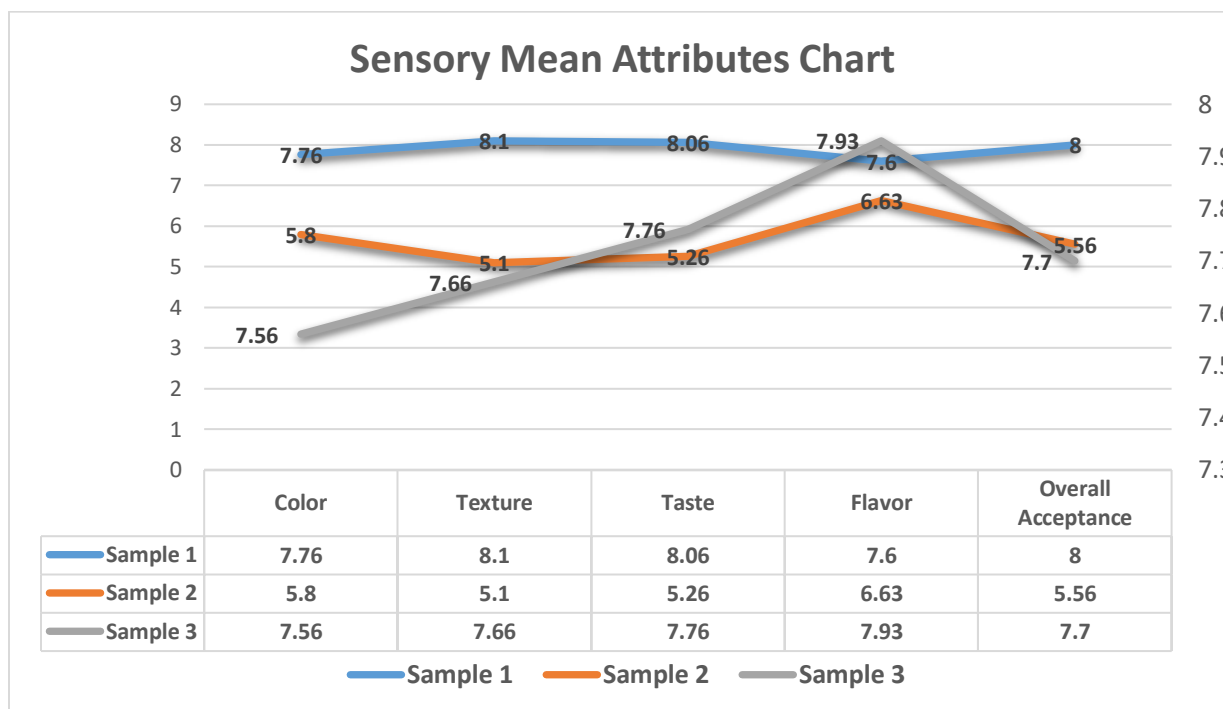
Sensory Attributes	Sample-01	Sample-02	Sample-03
Color	7.76	5.8	7.56
Texture	8.1	5.1	7.66
Taste	8.06	5.26	7.76
Flavor	7.6	6.63	7.93
Overall Acceptance	8.0	5.56	7.7

**Table-2: Mean sensory attributes of three samples.**

#### 4.2 Discussions:

Mean value of color as sensory attribute in considering consumer preference of three samples showed that color of sample 1 is more preferable than other two samples. Lower mean for color in considering consumer preference was observed in case of sample 2. Mean value of texture as sensory attribute of three samples showed that texture of sample 1 is more preferable than other two samples. Lower mean for texture was observed in case of sample 2. Mean value of taste as sensory attribute of three samples showed that taste of sample 1 is more preferable than other two samples. Lower mean for taste in considering consumer preference was observed in case of sample 2. Mean value of flavor as sensory attribute in considering consumer preference of three samples showed that flavor of sample 3 is more preferable than other two samples. Lower mean for Flavor in considering consumer preference was observed in case of sample 2. Mean value of overall acceptance as sensory attribute in considering consumer preference of three samples showed that overall acceptance of sample 1 is more than other two samples. Lower mean for overall acceptance was observed in case of sample 2. Sample 1 was more preferable and sample 2 had least consumer preference in considering all the sensory attributes.





**Figure: 4.2.1** Line Chart Shows that, Sample-1 got highest mean score than other two Sample & Sample-2 got less mean score consumer preference in considering all the sensory attributes.

## **CHAPTER-05**

### **Conclusions:**

By completing this project report, the results of the study showed that date instant powder drinks prepared with 10% dry date powder showed a positive result & it was approved to be the best in all sensory attributes by 30 panelists. Hence there is a great scope to develop & popularize instant powder drinks in Bangladesh and as IPD from 10% date fruits was revealed as most preferable in considering color, flavor, taste, texture and overall acceptability, more research can be carried out for further consideration of the product with 10% date fruits.



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