



# **Daffodil** *International* **University**

## **Project Report**

On

**Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-  
Ginger Squash**

**Submitted to**

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**Date of Submission: 23<sup>th</sup> December, 2018**

# LETTER OF TRANSMITTAL

23<sup>th</sup> December, 2018

Professor Dr. Md. Bellal Hossain  
Head  
Department of Nutrition & Food Engineering  
Daffodil International University.

**Subject:** Submission of project report on Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-Ginger Squash

Dear Sir,

With all due respect I would like express my gratitude for your guidance and support during my study. It is a great pleasure and honor for me to have the opportunity to submit project report on **Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-Ginger Squash** as a part of the Nutrition & Food Engineering (NFE) program curriculum.

Prepare this report I collected what I believe to be most relevant information to make my report as analytical and reliable as possible. I have prepared this report based on the acquired taste knowledge during my thesis work. During report preparation the practical experience and knowledge gathered will immeasurably help future professional in my life.

I therefore, would like to place this report to your judgment and suggestion. If you have any queries regarding my report, I would gladly answer your queries.

Thank you again for your support and patience.

Sincerely Yours,

**Meher Marzan Khansur**

**ID- 151-34-382**

**Department of Nutrition & Food Engineering**

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## CERTIFICATE APPROVAL

I am pleased to certify that the Project report on Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-Ginger Squash at Daffodil International University Conducted by **Meher Marzan Khansur ID: 151-34-382** of Department of Nutrition & Food Engineering has been approved for Defense/Viva voice. Under my supervision **Meher Marzan Khansur** worked in the laboratory at Daffodil International University.

I am pleased to hereby certify that the data and finding presented in the report are the authentic work of **Meher Marzan Khansur**. I strongly recommended the report presented by Meher Marzan Khansur for further academic recommendation & defense/Viva-voice. I wish her all success in life.

**Professor Dr. Md. Belal Hossain**

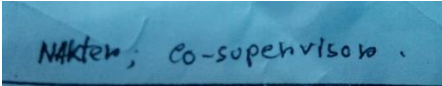
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At first thanks to almighty Allah, the most merciful, kind & gracious guidance has made my work successful. I also grateful to the honorable Vice chancellor of DIU for fulfill my B. Sc. Degree on Nutrition & Food Engineering (NFE).

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I respect and thank Head, **Professor Dr. Md. Bellal Hossain** Department of Nutrition & Food Engineering, for his kind cooperation and to accept this degree.

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I am also grateful to all my teachers for their countless inspiration & encouragement during my student life in this department. I also thanks to all of my friends for inspired me for good result.

**DEDICATION**  
**THE PROJECT WORK**  
**IS DEDICATED**  
**TO MY BELOVED PARENTS**

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## **ABSTRACT**

Aloe Vera has an important role in therapeutic as it has potential physiological benefits. Aloe Vera based lemon- ginger squash was prepared in the present study from the prospect of the health benefits and enjoyable sensory qualities. Two formulations of Aloe Vera- lemon- ginger squash (S-1, S-2) were prepared. Organoleptic analysis of the resultant product was carried out with nine point hedonic scale taking 40 untrained assessors. The formulation S-2 was found to be the most preferred with respect to the sensory quality. Further, physico chemical analysis such as brix, pH and ash of the preferred product was determined.

Key words: Squash, Lemon, Ginger, Aloe Vera, Sensory evaluation.

# **CHAPTER– ONE**

## **INTRODUCTION**

## **Introduction**

**1.1 Squash:** Squash is concentrated non-alcoholic syrup. It's basically made from water, sugar and fruit juice. Sometimes add color for appearance. Squash do not drink directly before drinking water squash is mixed with a certain amount of water. Squash is more sweetened than juice and shelf life is more than juice.<sup>[1]</sup>

**1.2 Lemon:** Lemon is a most popular Citrus fruit. In 1493,( first lemon tree in America is planted by the Italian navigator Christopher Columbus.(2) It's contains nutritive value and health benefit. It's also contains vitamins minerals which are necessary for human body. It can be stored at room temperature.



**Figure: 1.2** Lemon

### **Benefits of Lemon:**

- Lemon improves digestion.
- Enhance immune system.
- Helps in weight loss.

**1.3 Ginger:** Ginger is a flowering plant. It is used as a spice and folk medicine. In 2016, global production of ginger was 3.3 million tonnes,(3) led by India with 34% of the world total. It's contains energy, carbohydrate, fat, and protein.



**Figure: 1.3** Ginger

### **Benefits of Ginger:**

- Ginger fighting with cold.
- Prevent cancer.
- Regulates blood glucose levels.

**1.4 Aloe Vera:** Aloe Vera is a succulent plant. It's found in many consumer products such as beverages, (4) sunburns cream, skin care lotion etc. Aloe Vera gel is used as an ingredient.



**Figure: 1.4** Aloe Vera

### **Benefits of Aloe Vera:**

- Aloe Vera reduce dental plaque.
- Reduce constipation.
- Lowers blood sugar levels.

## **1.5 General Objectives of Aloe Vera incorporated Lemon-Ginger Squash**

Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-Ginger Squash.

## **1.6. Specific objectives of Aloe Vera incorporated Lemon-Ginger Squash**

- To determine the general acceptability of the sensory qualities (appearance, odor, taste, general acceptability) of Aloe Vera incorporated Lemon-Ginger Squash
- To popularize Aloe Vera incorporated Lemon-Ginger Squash the people of Bangladesh.
- Provide energy to the people.

## **1.7. Project Methodology:**

- Collected ingredients
- Prepare Aloe Vera incorporated Lemon-Ginger Squash.
- Sample amount 700 ml.

## **1.8 Scope of the project**

Through extensive discussion this report has been prepared. The main intention of this report is Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-Ginger Squash. Basically I made this product for provide energy to the people. The report covers details about is Preparation and Quality Evaluation of Aloe Vera incorporated Lemon-Ginger Squash.

# **CHAPTER- TWO**

## **MATERIALS AND METHODS**

## MATERIALS AND METHODS

### 2.1 Materials and Methods

The study was conducted with Laboratories of the Department of Nutrition and Food Engineering, Daffodil International University, Dhaka.

### 2.2 Collection of Raw Materials

All materials (Lemon, Ginger, and Aloe Vera) was collected from the local market.

### 2.3. Preparation of Aloe Vera incorporated Lemon-Ginger Squash:

#### 2.3(A): Step-1: Preparation of Lemon, Ginger, and Aloe Vera gel:

##### Preparation of Lemon juice:

- At first collected fresh and mature lemon from local market.
- Then wash it and cut it 2 pieces.
- Then collected lemon juice by hand machine of lemon.



**Figure: 2.3(A)** Lemon juice

##### Preparation of Ginger juice:

- At first collected fresh ginger from local market.
- Then wash it clearly and cut it very small size.
- Then collected juice by blender machine.





**Figure: 2.3(A)** Ginger juice

**Preparation of Aloe Vera gel:**

- At first collected fresh and mature Aloe Vera from local market.
- Then wash it clearly and cut it normal pieces and then remove Aloe Vera gel from Aloe Vera.
- Then Aloe Vera gel put on blender and collected Aloe Vera gel.



**Figure: 2.3(A)** Aloe Vera gel

### 2.3(B): Aloe Vera incorporated Lemon-Ginger Squash making process with details:

#### Apparatus/Tools:-

- Pan
- Spoon
- Strainer
- Bottle

#### Ingredients (For 100 ml):-

- Water- 14 ml
- Sugar- 100g
- Lemon juice- 45ml
- Ginger juice- 10ml
- Aloe Vera gel- 5g for S-1 and 10 g for S-2



**Figure: 2.3(B)** Aloe Vera incorporated Lemon-Ginger Squash

**Procedure:-**

- At first pan and spoon wash clearly and then pan keep on the stove.
- Then take water on the pan and add sugar.
- Then stirring continuously until dissolve.
- When it dissolve properly off the stove.
- Then add lemon juice, ginger juice, and Aloe Vera juice instantly before cool.
- Then stirred properly.
- Then strain the squash and keep it on the bottle.
- Storage at refrigerator.

**Table: Composition of Ingredients for S-1 & S-2 (100 ml)**

<b>SL.</b>	<b>Sample</b>	<b>Aloe Vera gel</b>	<b>Lemon juice</b>	<b>Ginger juice</b>
<b>1</b>	<b>S-1</b>	<b>5g</b>	<b>45</b>	<b>10</b>
<b>2</b>	<b>S-2</b>	<b>10g</b>	<b>45</b>	<b>10</b>

**2.4 Health Benefits of Aloe Vera incorporated Lemon-Ginger Squash(S-2):**

- It helps immune system.
- It makes skin smooth.
- Also reduce muscle pain.
- Promote hair growth.
- Reduce dental problem(5)

**2.5 Sensory Evaluation:**

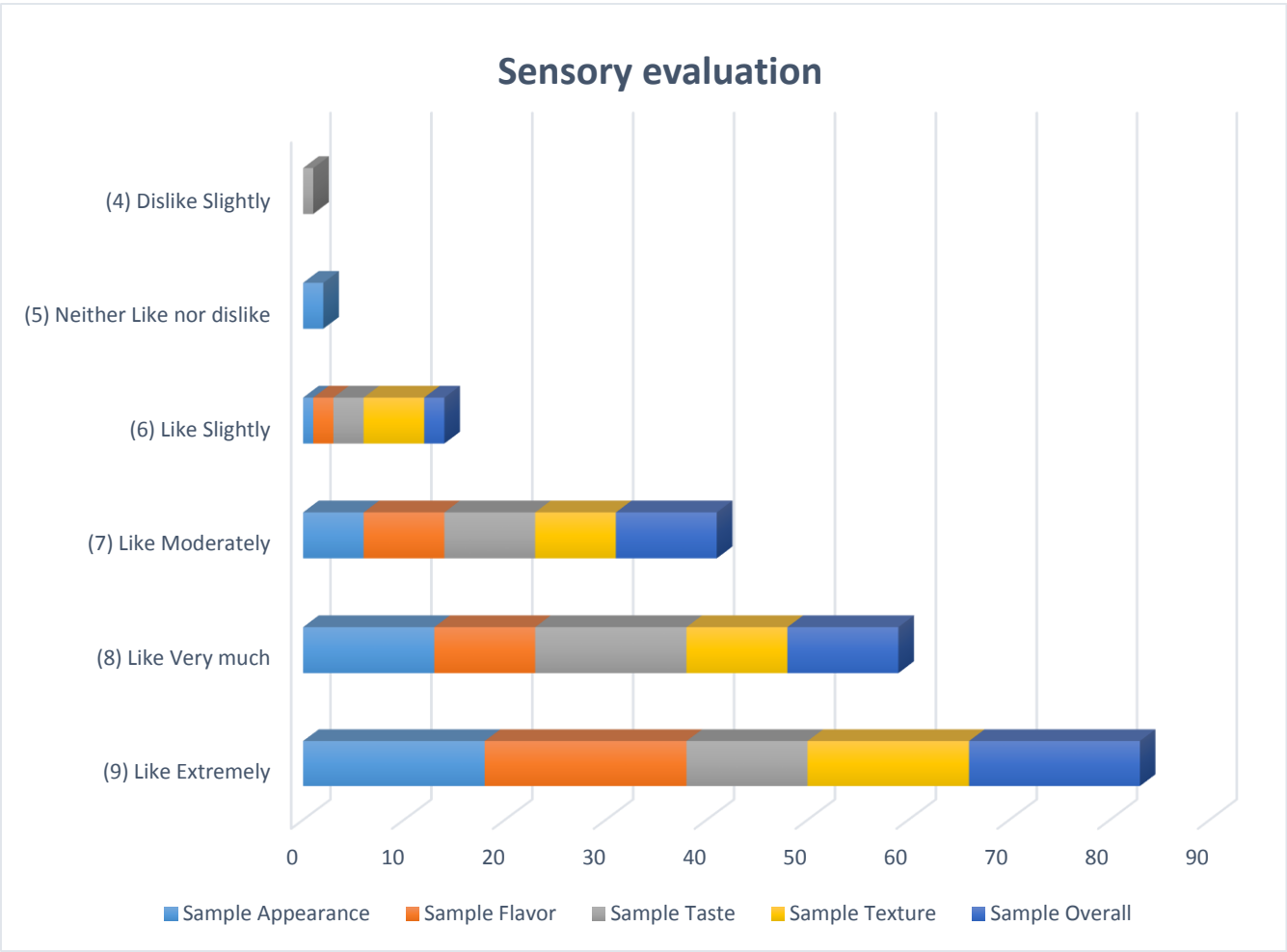
Sensory evaluation of Aloe Vera incorporated Lemon-Ginger Squash was carried out with taking 40 untrained assessors. It was done with considering appearance, flavor, taste, texture and overall acceptability by score rating on the basis of 9 points hedonic scale.

**Sample: Aloe Vera incorporated Lemon-Ginger Squash (S-1)**

<b>SCORE</b>	<b>Sample (S-1)</b>				
	<b>Appearance</b>	<b>Flavor</b>	<b>Taste</b>	<b>Texture</b>	<b>Overall Acceptance</b>
<b>(9) Like Extremely</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>8</b>	<b>15</b>
<b>(8) Like Very much</b>	<b>2</b>	<b>13</b>	<b>17</b>	<b>5</b>	<b>10</b>
<b>(7) Like Moderately</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>10</b>	<b>6</b>
<b>(6) Like Slightly</b>	<b>18</b>	<b>8</b>	<b>4</b>	<b>8</b>	<b>6</b>
<b>(5) Neither Like nor dislike</b>	<b>10</b>	<b>2</b>		<b>9</b>	<b>3</b>
<b>(4) Dislike Slightly</b>		<b>1</b>	<b>3</b>		
<b>(3) Dislike Moderately</b>					
<b>(2) Dislike very much</b>					
<b>(1) Dislike Extremely</b>					

**Sample: Aloe Vera incorporated Lemon-Ginger Squash (S-2)**

<b>SCORE</b>	<b>Sample (S-2)</b>				
	<b>Appearance</b>	<b>Flavor</b>	<b>Taste</b>	<b>Texture</b>	<b>Overall Acceptance</b>
<b>(9) Like Extremely</b>	<b>18</b>	<b>20</b>	<b>12</b>	<b>16</b>	<b>17</b>
<b>(8) Like Very much</b>	<b>13</b>	<b>10</b>	<b>15</b>	<b>10</b>	<b>11</b>
<b>(7) Like Moderately</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>10</b>
<b>(6) Like Slightly</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>2</b>
<b>(5) Neither Like nor dislike</b>	<b>2</b>				
<b>(4) Dislike Slightly</b>			<b>1</b>		
<b>(3) Dislike Moderately</b>					
<b>(2) Dislike Very much</b>					
<b>(1) Dislike Extremely</b>					



**Figure: Overview sensory evaluation (S-2)**

# **CHAPTER- THREE**

## **LABORATORY TEST**

### 3.1 Determination of Ash:-

#### Apparatus:-

- Crucible lid
- Electric muffle furnace
- Desiccator
- Stop watch
- Weight machine

#### Material:-

Aloe Vera incorporated Lemon-Ginger Squash



**Figure: 3.1** Muffle Furnace



**Procedure:-**

- At first weight the crucible lid by electrical balance
- Then weight 5g Aloe Vera incorporated Lemon-Ginger Squash with crucible lid by electronic balance
- After that set the time and temperature of the muffle furnace at 600°C for 6 hours.
- Then put the sample on muffle furnace.
- After that run the muffle furnace.
- After 6 hours stop the muffle furnace and keep it for 2 hours for cool
- Then kept in to the desiccator for 30 minutes
- Then finally calculate it.

**Calculation:-**

$$\text{Ash\%} = \frac{\text{Mass of Ash}}{\text{Mass of sample}} \times 100$$

Before heat,

Crucible lid weight = 24.73g

Sample weight = 5g

Crucible lid + sample weight = 29.75

After heat,

Crucible lid + sample weight = 26.88

So, Mass of Ash = 29.75-26.88 = 2.87

Now,

$$\begin{aligned}\text{Ash\%} &= \frac{\text{Mass of Ash}}{\text{Mass of sample}} \times 100 \\ &= \frac{2.87}{5} \times 100 \\ &= 57.4\%\end{aligned}$$

**Result:-**

So, Aloe Vera incorporated Lemon-Ginger Squash contains 57.4% of Ash.

**3.2 Determination of Brix:**

**Apparatus:-**

- Refract meter
- Biker
- Weight scale

**Material:-**

Aloe Vera incorporated Lemon-Ginger Squash



**Figure: 3.2** Refract meter (Brix)

**Procedure:-**

- At first measured the Aloe Vera incorporated lemon-Ginger Squash solution by the weight scale.
- At first washed the refract meter by the water
- Then dried it by the tissue paper
- Then took on drop of sample solution and spread it on to the refract meter.
- Blue line inside the refract meter always indicator the Brix level.

**Result:** - 1 degree of Brix is 1g of sugar content in 100g of solution. My result of Brix is 9 degree.

**3.3 Determination of pH:**

Serial No.		pH
Sample 1	Aloe Vera incorporated lemon-Ginger Squash (Raw)	2.55
Sample 2	Aloe Vera incorporated lemon-Ginger Squash (Solution)	2.26

### 3.4 Determination of Acidity:

<b>1<sup>st</sup> Reading</b>	<b>9-27</b>	<b>18</b>
<b>2<sup>nd</sup> Reading</b>	<b>27-47</b>	<b>20</b>
<b>3<sup>rd</sup> Reading</b>	<b>47-66</b>	<b>19</b>

So, Acidity of Aloe Vera incorporated lemon-Ginger Squash is 19.

# **CHAPTER- FOUR**

## **RESULT AND DISCUSSION**

#### **4.1Result:**

#### **Aloe Vera incorporated lemon-Ginger Squash**

<b>Component</b>	<b>Percentage</b>
<b>Ash</b>	<b>57.4%</b>
<b>pH</b>	<b>9</b>
<b>Brix</b>	<b>2.55 (Raw)</b> <b>2.26 (Solution)</b>
<b>Acidity</b>	<b>19</b>

**4.2** After completing work found the quality of product. In the laboratory test found the Ash, Brix, pH, and Acidity of product Aloe Vera incorporated lemon-Ginger Squash.

#### **4.3 Sensory evaluation:**

Sensory panel member test product and compare with other drinks. They like my product (Appearance, Test, Flavor, and Texture).

# **CHAPTER- FIVE**

## **CONCLUTION**

## **Conclusion**

The results of the present investigation provide an effective way of delivering the benefits of A. Vera in a tasty and refreshing way as Aloe-Vera lemon-ginger squash to consumers. The study revealed that the product S-2 having A. Vera gel (10 wt%) was the best formulation as per the analysis of sensory attributes between the two developed products of the A. Vera lemon-ginger squash. Use of lemon and ginger in reducing the bitter taste of the Aloe Vera extract has been successfully achieved in the study. This may be a novel option for consumers seeking squash with health benefits. Development of such product may thus act as an important employment generating option.



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