Project Report

ON

Proximate Analysis of Amla and comparison of Indian and Desi Amla

At

Daffodil International University

SUBMITTED TO

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Date of Submission: 20th December, 2018

LETTER OF TRANSMITTAL

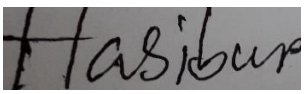
Date: 18thDecember, 2018
Pro.Dr.Md.Bellal Hossain
Head
Department of Nutrition & Food Engineering
Daffodil International University

Subject: Submission of project report

Dear Sir,
With all due respect I would like express my gratitude for your guidance and support during my study. It would not be possible for me to complete this report without your support. I am also thankful to Daffodil International University and my teachers and many other respective persons for their supervision, support and assistance during my Project work.
To prepare the report I collected what I believe to be most relevant information to make my report as analytical and reliable as possible. I have concentrated my best effort to achieve the objectives of the report and hope that my endeavor will serve the purpose. The practical knowledge and experience gathered during report preparation will immeasurably help in my future professional life. I request you to excuse me for any mistake that may occur in the report despite of my best effort.
I would really appreciate it you enlighten me with your thoughts and views regarding the report. If you have any queries regarding my report, I would gladly answer your queries.

Thank you again for your support and patience.

Sincerely Yours,



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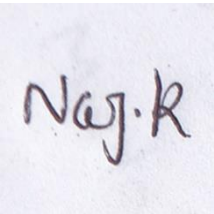
CERTIFICATE APPROVAL

I am pleased to certify that the Project report **on proximate analysis of Amla and comparison Indian And Desi Amla** at Daffodil International University Conducted by Md Hasibur Rahman bearing ID: 153-34-461 of Department of Nutrition & Food Engineering has been approved for Defense/Viva voce. Under my supervision Md Hasibur Rahman worked in the laboratory at Daffodil International University.

I am pleased to hereby certify that the data & test presented in the report are authentic work of Md. Hasibur Rahman. I strongly recommended the report presented by Md Hasibur Rahman for further academic recommendation & defense/Viva-voce MD Hasibur Rahman a strong moral character & a very pleasant personality. It has indeed a great pleasure working with him. I wish him all success in life.



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ACKNOWLEDGEMENT

First of all my gratitude & thanks to almighty Allah, the most merciful, kind & gracious guidance has made my work successful. I would like to say thanks to the honorable Vice chancellor of DIU for fulfill my B.Sc. Degree on Nutrition & Food Engineering.

My deep gratitude & sincere thanks to the honorable Head, Department of Nutrition & Food Engineering, **Professor Dr. Md. Bellal Hossain**, for his kind cooperation & encouragement to accept this Degree.

My deep & Sincere appreciate **Najia Kamrul,Lecturer**,Department of Nutrition & Food Engineering for this constructing suggests this at guidance have helped tremendously in the preparation of this report work.

I am also grateful to **Dr. Rezaul Karim**,Assistant Professor; **Nasima Akter**, Lecturer; **Faojia Akter**, Senior Lecturer; **Tasmia Tasnim**, Lecturer; **Effat Ara Jahan**, **Md Abir Hossain,**Lecturer for their countless inspiration & encouragement during my student life in this department.

Also thanks to all of my friends who always inspired me for good result & always support me in good works.

THE PROJECT WORK

IS DEDICATED

TO

MY BELOVED PARENTS

ABSTRACT

Amla is native of India. It is one of the richest source of vitamin C. Availability of amla products in the local market, their physicochemical parameters and effect of storage was assessed. Juices and powders (including capsule) formed the major amla products in the market followed by candy, pickle, chyavanprash, jam and salted amla. Seven types of products and thirty seven brands of amla products were available in the market. Twenty four amla products were analyzed for their physicochemical properties. PH and titratable acidity of the products ranged from 2 to 4 and 0.64 to 6.06 per cent respectively. Amla products had wide differences in their physico-chemical parameters. Vitamin C ranged between 48.33 and 1033.00 mg/100g, phenols ranged between 0.21 and 23.70 mg/tannins ranged between 1.53 and 7.00 mg/g, total antioxidant activity ranged between0.40 and 8.33 mg/g and DPPH free radical scavenging activity ranged between 4.26 and86.52 per cent. Laboratory made amla products had high DPPH free radical scavenging activity when compared to the commercial preparations. Powder, candy, juice, chyavanprash and pickle were stored in refrigerated and ambient conditions for three months. Retention of vitamin C (96%), DPPH free radical scavenging activity (100%), color and sensory attributes of the products was better in refrigerated conditions. Loss of vitamin C was more than 50 per cent in samples stored under ambient conditions. Intense browning occurred in candy, juice and pickle stored in ambient conditions.

Keywords: Emblica, officinalis, Gaertn., Amla fruit, blood glucose**,**

TABLE OF CONTENT

CHAPTER ONE

Introduction

Introduction :

Amla (Emblika official) Amla (Emblika officişis) (EO) Ayurveda is in a holy place. It is made by medicine in Indian system. Amla The first tree can be made into the universe, where the Indian mythological family is based, according to belief, Amla is also known in India as Falunt has Emblika or ammunition in India. The bureau is increasing day by day in the tropical and Indian inhabitants of the country and in the colonial areas. Such as Uzbekistan, Sri Lanka, South East Asia, China. Amla fruit is believed to increase the defense and it is widely used in Ayurvedic

preparations. It also plays a beneficial role in the harmful diseases like cancer, diabetes, liver, and also plays a role in particular treatment, ulcers, anemia, heart disease etc.

1.1 Indian Amla:

Amla is an essential stock of Vitamin C and other nutrients. Amla got known in India as goosbery because it surrounded several stories or Nellies. Goosbery is a name that indicates its source. These stories flow mostly from our sacred filth and await the Sterling quality of the fruits. Many years from now, Ayurveda is set to administer bureaucracy for various illnesses. Indian bureaucrats look bigger. Actually this flower has five flavors, such as dates, sweet, intense, bitter and intense. All parts of the plant contain medicinal value.

1.2 Desi Amla:

Local bureaucracy is just a little smaller in size. Moreover, there is less sincerity than Indian bureaucracy. Just as Indian bureaucrat is using Ayurveda for the purpose, we are using our country's bureaucracy and Ayurvedic work. All parts of the plant have medicinal properties. It probably contains 100 gm per 720 mg of vitamin C in plant life. Vitamin C prevents the brain from scurvy bleeding. Fresh bills enjoy their goodness. But dry or powder bureaucracy is also a good alternative

1.3 Composition of Indian Amla and desi soto Amla:

Physical characteristics of different varieties of Amla are given in Table 1.2.Size, shape andweight were found to vary among the different varieties of AmlaThe salient findings are given in Table 1.3. They also reported compositional differences in different varieties of Amla. In general the average composition of Amla fruits are: moisture 81.2%, protein 0.5%, fat 0.1%, carbohydrates 14.1%, mineral matter 0.7%, fiber 3.4%, Ca 0.05%, K 0.02%, Fe 1.2 mg/100g, nicotinic acid 0.2 mg/g, phyllemblin, phyllemblic acid, gallic acid, emblicol, quercetin, hydroxymethyl furfural, ellagic acid, pectin10-11, putranjivan A,12 two new hydrolysable tannins called emblicannin A and B, punigluconin and pendunculagin13.

1.4 General objective and Specific objective of Amla

1.4.1 General Objective:

The main objective of this session is to equip district teams with the knowledge and skills to be able to respond promptly to outbreaks of disease, so as to Prevent spread of infection and reduce deaths.

1.4.2 Specific objectives:

At the end of this unit the participant should be able to:

1. Explain the meaning of an outbreak
2. Describe the criteria for detecting an outbreak in a district
3. Describe the key steps in responding to an outbreak in a district

1.5 Project Methodology:

1. Drying the Amla by solar dryer
2. Sample size (raw 1-1.5 kg)

CHAPTER TWO
MATERIALS AND METHODS

2.1 Materials and Methods:

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

2.2 Collection of Raw Materials

The fresh Amla was collected from the local market.

2.3 eparation of amla powder.

Selection of Amla

Fresh and mature amla was collected for powder making. One kg alma were randomly selected and used during present study.

Preparation of slices:

The selected fresh amla were peeled out and cleaned with fresh water. Then slice all the amla into(1-2 and 1/2-1) inch.

Figure:2.1 Desi slice alma

Figure :2.2 Indian slice alma

Pre-treatment

Blanching:

Blanching is a cooking process where the food substance usually a vegetables or fruit is scalded in boiling water, removed after a brief, time interval and finally plunged into ice water.

Blanching has a number of benefits which helps t keep them fresh, maintain color, reduce microbes. I did blanching the slice amla at warm water 70ºc for 5 min.

KMS: KMS (Potassium Meta Bi- sulphate) is a good preservative, which keep the natural color food and protect food against bacteria. It was used about 1 ppm in the blanching amla

Drying and powder making of amla

At the end of the blanching, the amla have to be scratched for 3 to 4 days by solar in a dryer40-50 degrees. After drying, make powder of amlas by blender.

Figure:2.3 Slice Amla drying

Figure:2.4 Slice Amla powder

Chapter Three

Laboratory Test

3.1 Determination of PH

Procedure

1. First there is no vaccine and 2/3 grams of Amla powder is made by distill water.
2. When we make a solution, we identify the ph meter with a part of the meter and then we have ph.

Figure:3.1 pH Meter

P^H of Indian amla 3.02 And P^H of Desi amla 3.53

3.2 Determination of Fiber

Apparatus

1. Oven
2. Baker
3. Analytical Balance

Process of fiber:

1. At first take a biker and sample weight

2. We create a solution by 2 amount of distill water.

3. We keep the binding on the oven until it has completely dried up to 105 degrees at the oven with 3 submissions. (Approximately 9 to 10 hours may take time.)

Figure: 3.2 Oven

Calculation:

Weight of fiber = (wt. of fiber + Biker) – (wt of Biker)

Weight of dry sample = (wt of dry sample + biker) – wt of biker

Indian Amla: $$\text{fiber}\% = \frac{\text{Mass of fiber}}{Mass\ of\ sample} \times 100$$

$$\text{fiber}\% = \frac{0.05}{5} \times 100$$

=1%

Desi Amla: $$\text{fiber}\% = \frac{\text{Mass of fiber}}{Mass\ of\ sample} \times 100$$

$$\text{fiber}\% = \frac{0.04}{5} \times 100$$

=0.8%

3.3. Determination of Ash:

Apparatus:

1. Crucible
2. Electric muffle furnace machine
3. weight machine
4. spoon

Process of Ash:-

1. Samples should be taken by two different crucibles.
2. Then two crucible will be kept at the 600 degree temperature for 6 hours in the electric muffle Furnace at crucible.
3. After six hours, the crucible will be out and cool to the desiccator.
4. Then we will take the weight of samples of burnt with crucible.

Figure :3.3 Electric Muffle Furnace

Calculation:

Weight of ash= (wt. of ash + crucible) – (wt of crucible)

Weight of dry sample = (wt of dry sample + crucible) – wt of crucible

Indian Amla:

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

$$\text{ash}\% = \frac{0.17}{5} \times 100$$

=3.4%

Desi Amla

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

$$\text{ash}\% = \frac{0.15}{5} \times 100$$

=3%

3.4 Determination of Vitamin C

Apparatus:

1. Biker
2. Funnel
3. Burette stand

Process

1) At first taken 10gm raw amla and slice the amla then made pest by motor
2) Pest filtering by filter and funnel (Filtering time maybe 3 to 4 hours)
3) Then taken a test tube rack and two test tube set at rack and taken per test tube at 10 ml 2,6 DPPH

Titration:

For set under the burette for titration. From the burette Ascorbic Acid was added into trapping test tube by drop-wise (drop counted 94 drops)and test tube was shaken gently. Ascorbic acid was added until color change. The end point was color change from blue to white color.

On the other hand For set under the burette for titration. From the burette Sample was added into trapping test tube by drop-wise(drop counted 86 drops) and test tube was shaken gently. Sample was added until color change. The end point was color change from blue to white color.

Figure: 3.4 Burette stand

Calculation:

$$\frac{94.}{\text{(100 mg/100 ml of vit .c)}} = \frac{86}{\text{(n mg of vit .C /100 ml)}}$$

$$\text{n mg vit.C} = \frac{94}{86}$$

$$= 1.09 \text{ mg}$$

3.5 Estimation of Protein

Procedure:

Kjeldhal method consists of 3 steps. They are as follows:

1. Digestion of sample
2. Distillation
3. Titration

1. Digestion of sample:

0.4g of sample was taken in a foil paper or a weighing paper. The sample was poured in a digestion flask. 10 ml of H_2SO_4 was added into it. Then 2g of digestion mixture was taken into the flask. Two digestion flask was used so that average value can be taken. The flasks were then heated in a kjeldahl digestion chamber. At first temperature was 40^0C. Later temperature increased to 60^0C. 3-4hours was waited for become the Solution colorless. Then the flasks were cooled and diluted with 100ml distilled water.

2. Distillation:

10 ml of solution from that flask was taken to the distillation flask. 150 ml of distilled water was taken into the flask. Then 10ml of 40% NaOH was added to the distillation flask. Solution was colorless.

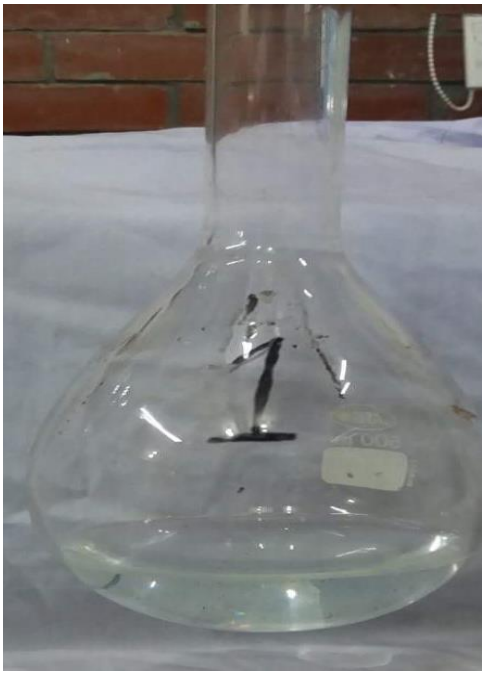

Figure: 3.5 Distillation flask with colorless solution

Three distillation flasks was taken for this procedure where one of them was blank. In the 3rd distillation flask only reagents were taken and contained no sample. On the other hand 50 ml of distilled water and 10ml of 0.1N HCl was taken in a trapping conical flask. 2 drops of methyl red was taken into the trapping conical flask. The solution become pink color.

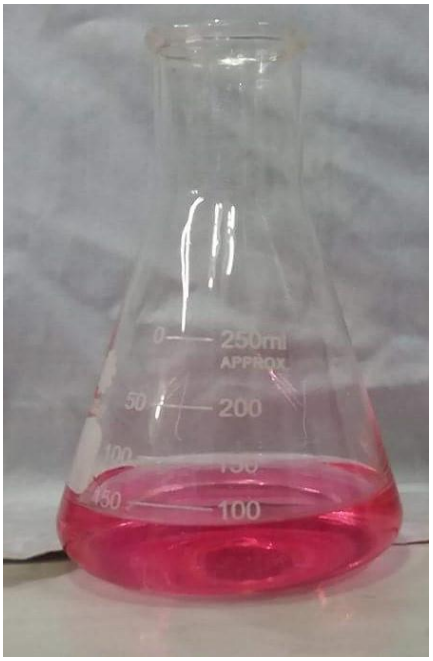

Figure: 3.6 Conical flask with Pink color solution

Three trapping conical flasks were used and contained the same thing. Then condenser was run for 30 min to complete the distillation process. Then trapping conical flasks were removed and titrate with NaOH.

titration the burette was filled with 0.1N of NoaH. Then trapping conical flasks were

3. Titration:

For set under the burette for titration. From the burette NaOH was added into trapping conical flask by drop-wise and conical flask was shaken gently. NaOH was added until color change. The end point was color change from pink to light yellow color.

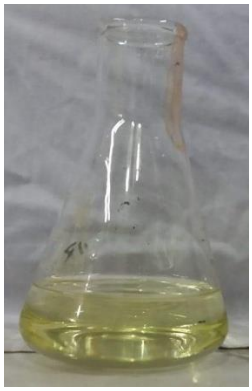

Figure: 3.7 End point of titration with light yellow color

Table: 3.2. Burette Reading for Titration

Content	Burette Reading				Average	
	Initial		Final			
	Indian	Desi	Indian	Desi	Indian	Desi
Sample-1	7.1	7.17	14.0	14	6.9	6.83
Sample-2	14	14	21	21	7	7
Blanks	0	0	7.1	7.17	7.1	7.1

Calculation:

Percentage of crude protein was calculated by using the following formula

Percentage of Protein $=\frac{(c-b)\times 14\times d\times 6.25\times 100}{a\times 1000}$

Where,

a= sample weight (g)

b= volume of NaOH required for titration for sample

c= volume of NaOH required for titration for Blank

d= normality of NaOH used for titration

6.25= the conversion factor of nitrogen to protein

14= the atomic weight of nitrogen

Here,

a= 0.4

b= 6.9

c= 7.1

d= 0.1

Indian Amla Percentage of Protein $=\frac{(7.1-6.9)\times 14\times 0.1\times 6.25\times 100}{0}$

$.4\times 1000$

=0.44 %

Desi Amla Percentage of Protein $=\frac{(7.17-6.83)\times 14\times 0.1\times 6.25\times 100}{0.4\times 1000}$

=0.74 %

Chapter Four
Result and Discussion

4. Result and Discussion

4.1 Quality Comparison of Indian amla and Desi amla:

After completing the project work we found that the quality is better than the Indian amla In the laboratory test it shows that ph, Fiber, Ash , Protein vitamin c percentage is better Than Desi amla

So this project is valuable for consumer and propriety of Indian Amla

4.2 Benefits Of Amla (Indian Gooseberry)

1. Slows Down Ageing.
2. Cures A Sore Throat.
3. Fights against Heart Disease.
4. Increases Diuretic Activity
5. Increases Metabolic Activity.
6. Reduces Blood Sugar.
7. High in Digestive Fiber.
8. Boosts Immunity.

4.3 Major Nutrients:

4.3.1 Major Nutrient	**Value per 100 g**	**% of RDA**
Total Calories	48	2.4%
Total Fat	0.5 g	0.5%
Protein	1 g	–
Total Carbohydrate	10 g	3%
Water	86 g	–
Phenolic Compounds Gallic Acid	3012.5 mg ?	NA

4.3.2 Carbohydrates

Carbohydrates	**Value per 100 g**	**% of RDA**
Total Carbohydrates	10 g	3%
Dietary Fiber	5 g	18%
Sugar	–	–
Starch	–	–

4.3.3Vitamins

Vitamins	Value per 100 g	% of RDA
Vitamin A, IU	290 IU	6%
Vitamin C	478 mg	800%
Vitamin D	–	–
Vitamin E (alpha-tocopherol)	0.16 ± 0.05 mg	–
Vitamin K	–	–
Thiamin	–	3%
Riboflavin	–	2%
Niacin	0.3 mg	1%
Vitamin B6	0.1 mg	4%
Folate	6 mcg	1%
Vitamin B12	–	–
Pantothenic Acid	0.3 mg	3%
Choline	–	–
Betaine	–	–

4.3.4Minerals

Minerals	Value per 100 g	% of RDA
Calcium, Ca	25 mg (42+/-12 mg)	3%
Iron, Fe	0.9 mg (0.16+/-0.04 mg)	6%
Magnesium, Mg	10 mg (13+/-2 mg)	2%
Phosphorus, P	21+/-5 mg	3%
Potassium, K	198 mg (151+/-37 mg)	6%
Sodium, Na	13+/-4 mg	0%
Zinc, Zn	0.12 mg (0.14+/-0.08 mg)	1%
Copper, Cu	0.1 mg (0.04+/-0.03 mg)	4%
Manganese	0.1 mg (0.71+/-0.06 mg)	7%
Selenium	0.6 mcg	1%
Chloride	25.6+/-2.3 mg	–

Chapter Five

Conclusion

Conclusion:

Now a days, research on Indian traditional medicinal plants has gained a new recommence. Although, the other systems of medicine are effective they come with a number of undesired effects that often lead to serious complicationsBeing natural, herbal medicine alleviates all these problems. Emblica officinalis (Amla)has an important position in Ayurveda- an Indian indigenous system of medicine. Amla due to its strong antioxidant and biological properties prevent innumerable health disorders as it contains essential nutrients and highest amount of vitamin C. It can be used as a possible food additive or in nutraceuticals andbiopharmaceutical industries. Several researchers revealed that various extractsand herbal formulations of amla showed potential therapeutic benefits against various diseases and the results are similar to standard drugs. In this review, we tried to make a summary the traditional and scientifically proven uses of amla and tried to establish their basic mechanisms. Even though, amla has various medicinal properties since ages, there is a colossal necessity to scientifically explore and evident its medicinal values at molecular level with help of various latest biotechnological tools and techniques.

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