A PROJECT WORK REPORT

OF

Phytochemical Screening of the seed of

"Syzygium cumini"

Supervised By:

Fouzia Akter

Assistant Professor

Department of Nutrition and Food Engineering

Daffodil International University

Submitted By

Srabone- Binte- Kabir

ID: 152-34-399

Department of Nutrition and Food Engineering

Daffodil International University

Submission Date: 15.05.2019

LETTER OF TRANSMITTAL

Date: 15.05.19

To,

Professor Dr. Md. Bellal Hossain

Professor & Head

Department of Nutrition and Food Engineering

Daffodil International University

Subject: Declaration regarding the validity of the 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 to the fact that this thesis report has neither been used before to fulfill any of my course and not it will be submitted to any other person or authority in future

Sincerely Yours.

Srabone- Binte- kabir

ID: 152-34-399

Department of Nutrition and Food Engineering

Daffodil International University

CERTIFICATION OF APPROVAL

I am pleased to certify that the project report on "Phytochemical Screening Of Syzygium cumini" conducted by Srabone Binte Kabir, ID No: 152-34-399 of the department of Nutrition and Food Engineering has been approved for presentation and defense/viva-voice. I am pleased to hereby certify that the data and findings presented in the report are the authentic work of Srabone Binte Kabir. I strongly recommended the report presented by Srabone Binte Kabir for further academic recommendations and defense/viva-voice. Srabone Binte Kabir bears strong moral character and a very pleasant personality. It has indeed a great pleasure working with him. I wish him all success in life.

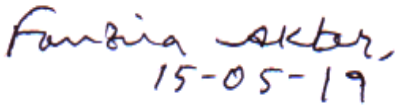
Professor Dr.Md.Bellal Hossain

Professor & Head

Department of Nutrition and Food Engineering

Faculty of Allied Health Science

Daffodil International University



Ms. Fouzia Akter

Assistant Professor

Dept. of Nutrition and Food Engineering

Faculty of Allied Health Science

Daffodil International University

ACKNOWLEDGEMENT

First of all I would like to express my gratitude to almighty Allah for giving me the strength and opportunity to complete the report in the schedule time successfully. In the preparation of this report, I would like to acknowledge the encouragement and assistance give to me by a number of people. I am taking the privilege to deliver my gratefulness to each and every people who are involved with me in every phase of my lives. 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. My deep gratitude and sincere thanks to my supervisor, **Ms. Fouzia Akter,** Department of Nutrition and Food Engineering for his whole-hearted supervision during the research time. I am very glad to deliver my gratefulness to each and every person who are involved with me in every phase of my life.

I also would like to thanks **Professor Dr. Md. Bellal Hossain Head of Department and Mr.A.K.M. Sarwar Inam, Assistant Professor,** for their countless inspiration and encouragement during mystudent life in this department. My gratitude goes to entire NFE Department of Daffodil international University.

I would like to express my warmest thanks to **Md.Reaz mahmud,** Assistant Technical Officer, &**Md. Emran Hossain,** Co-ordination Officer, Department of Nutrition & Food Engineering. I express my deep gratitude to the office/labs stuff of the Department of Nutrition & Food Engineering under faculty of Allied Health Sciences, Daffodil International University

DEDICATION

All the hard work behind this thesis only possible by the grace of almighty Allah. This project is dedicated to my father, who taught me that the best kind of knowledge to have is that which is learned for its own sake. It is also dedicated to my mom, who taught me that even the largest task can be accomplished if it is done one step at a time. I also dedicate this to my younger cousin who always appreciate me. I dedicate this to my supervisors who helped me to complete this project.

ABSTRACT

Phytochemical screening of Syzygium cumini is an important medicinal plant .The seeds of Syzygium cumini are claimed to contain alkaloid, jambosinc, glycoside, which halts the diastolic conversation of starch into sugar. phytochemical are found from various parts of plants such as leaves, flower, seeds, barks, roots and pulps. Phytochemical also gives plants color, flavor and aroma but after eat them they work, with other phytochemicals and nutrients to fend off cancer, heat, diseases, diabetes, age related disease etc. This plants seed crude extract is the natural source of antioxidants . The Syzigium cumini seed was dried by air and made it's crude. The secondary metabolites of Phytochemical Screening was performed with Water, Methanol, Ethanol, Chloroform, N- butanol .

The extract isolated at 20º showed maximum Inhibition 50% .Water Extract of Syzygium cumini showed the presence of flavonoids , carbohydrates ,tannins, phenol , sterols was not present . Methanol extract of Syzygium cumini showed the presence of alkaloids , carbohydrates , Glycosides , phenols , saponins, steroids. Ethanol Extract contains flavonoids , tannins , phenols. Chloroform extract showed then presence of flavonoids, carbohydrates, tannins, phenols , sterols . N-butanol extract contains flavonoids, carbohydrates , tannins , phenols , sterols was not present . This Phytochemical screening showed the presence of various medicinal Phytochemicals from Syzygium cumini extract . It may have application in traditional system of medicine to cure various ailments .

.

Contents PAGE

Chapter-1

1.1Introduction

Medicinal plant is used in drug development for the treatment of many human diseases from the beginning of the human history. Traditional folk treatment always guide the research and the development of medicine for human and animal. Some medicinal plant are obscured with in the plant which need to be scientifically evaluated. (The scientific world journal , 2017)

Qualitative and quantitative Phytochemicals presents in the medicinal plants detected by the Phytochemical screening and also evaluate antioxidant properties .(Asian Pac Trop Biomed , 2014)

Phytochemical means the biologically active compounds present in plants. Those phytochemical are found from various parts of plants such as leaves, flower, seeds, barks, roots and pulps. (CABdirect.org).

The phytochemical research is effective in discovering bioactive profile of plants of therapeutic importance. When used in cosmetic reparations as antimicrobial agents as well as antioxidants phytochemical play an important role. Phytochemical also gives plants color, flavor and aroma but after eat them they work, with other phytochemicals and nutrients to fend off cancer, heat, diseases, diabetes, age related disease etc. α- naphthalene, ammonia , sulfuric acid , hydrochloric acid , Fecl_3, lead acetate use for Phytochemical screening .(American Journal of Phytoclinical Therapeutics , 2016)

Many antioxidant found in fruits and vegetable .Approximately 20% of plants used in medichinal studies . Many plants has helpful antioxidants which are presence of vitamin A,C,E and Flavonoids, tannins etc . The consumption of fruits and vegetable has been linked with various health benefits .as a results of high nutritive value and health benefit .Mainly Syzygium cumini seed used for diabetic treatments . This seed extract are less toxic than synthetic medicine . Syzigium cumini works as an antioxidant . An antioxidant delay or inhabits oxidative damage to a target molecule .The natural antioxidants are safer than synthetic antioxidants because natural antioxidants has no side effects . Many researcher are interested in medicinal plants because the

evaluation of the Phytochemicals antioxidants as flavonoids , phenols, tannins which helps people prevent many diseases. ((Asian Pac Trop Biomed , 2014)

Phytochemical test helps to measuring the bioactive compounds of Syzigium Cumini . The seed extract has various antimicrobial effects on gram positive(Bacillus subtilis) and gram negative bacteria (Bacillus, E. coli) . (Research Journal of Research & Technology , 2017)

Syzygium cumini also has an antibiotic effects in Hyperglycemic rats . This extract helps to cure hyperglycemia by the reducing of blood glucose level .

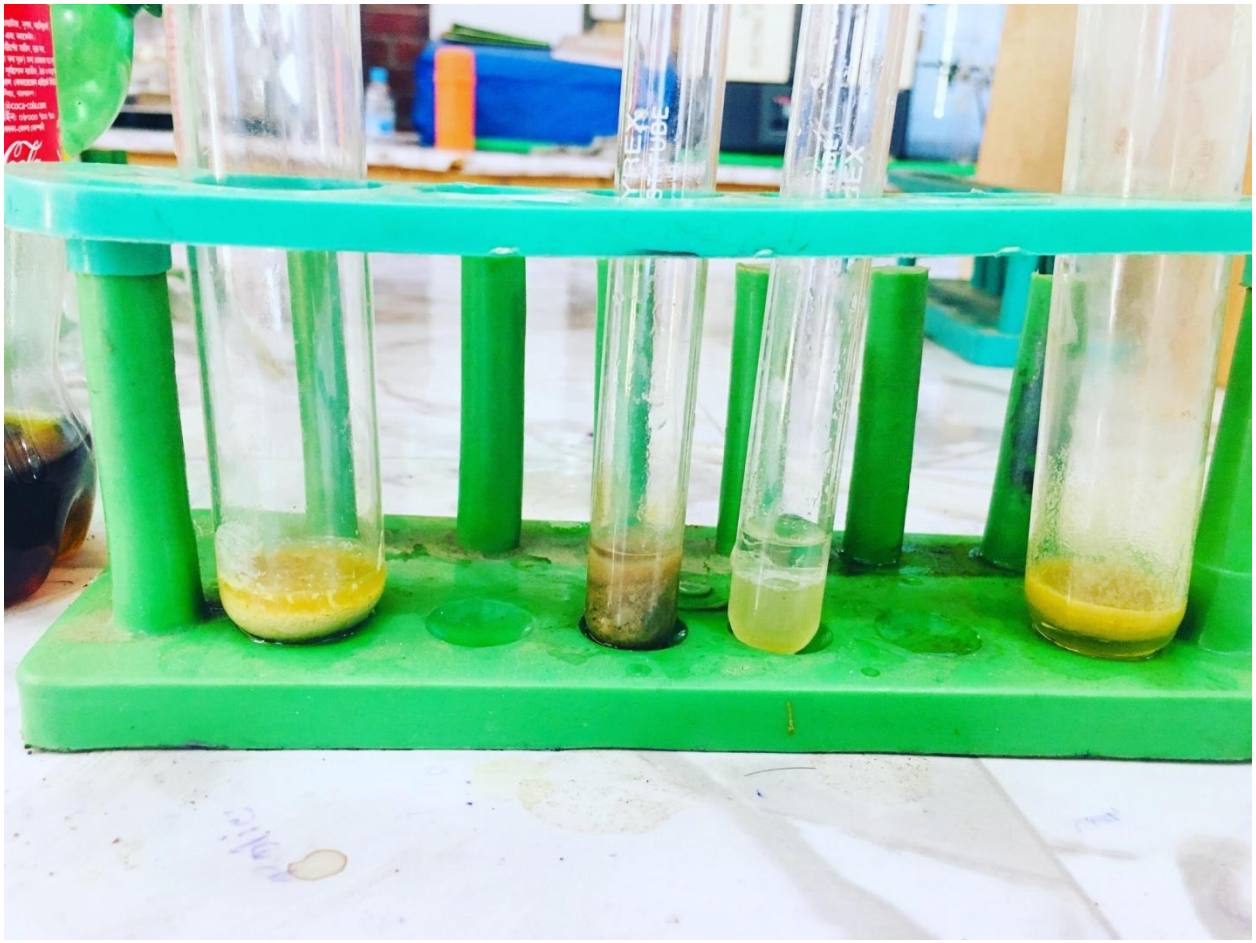


Figure 1 : Phytochemical Test

1.2 literature review

The genus of Syzygium cumini is one of the genera of the myrtle family myrtaceae which is native to the tropics , particularly to tropical America and Australia. The genus contains about 1100 species and has a native range that entrants from Africa and Madagascar through southern Asia east through the pacific . (Asian J Trop biomed, 2014).

Sygygium cumini tree introduced to Florida in 1911 by USDA, and it was introduce in India Portuguese colonization . It usually grows 10-15 meters tall , but it can reach a hight up to 35 meters .(Ken fern , 2019)

This tree can live more than 100 years . The bark of this trees are gray and lighter gray means upper smoother. The stem bark is contains butanilic acid, epi-friedelanol , eugenin etc. The presence of gello and ellagi-tannins maybe responsible for the astringent property of stem bark . Wood of this plat's are water resistance and for this reason this is use for railway sleeper . Sometimes it is used for cheap furniture . The leaves of this planst's has an aroma similar as turpentine . Leaves are pinkish when it is young and become greenish . Leaves are become 6-12 centimeter. This leaves are used for livestock and it has great nutritive value .The flower of this plant contains kaempferol , quercetin, myrecetin etc.
The root are rich in flavonoids, glycosides, isorhamnetin .The fruits are contains raffinose, glucose, fructose, malic acid, gallic acid, anthrocayanins . The sourness of this fruit depands on the gallic acid.(Asian Pacific Journal,2012).

it is an an antidiuretic plant. This plants is containing anthocyanin. The seeds of Syzygium cumini are claimed to contain alkaloid, jambosinc, glycoside, which halts the diastolirc conversation of starch into sugar. (Asian J Trop biomed, 2014).

Syzygium cumini is known to grown in the many others adjoin regions of South Asia and Indian sub content such as India, Bangladesh , Burma , Nepal , Pakistan , Srilanka and Indonesia . Long ago it was introduced in Malaysia, in Southern Asia. In many places it has been known as fruit producer and also for its timber . This plant is available in India. (Asian J Trop biomed, 2014).

Mainly Syzygium cumini is known as Indian summer fruit called “jam” or “jamun” . This tree is used in medicinal fields. Started from the earlier period this tree is used for Ayurveda and Unani medicine in traditional treatment. In many developing countries where medicine is not developed Syzygium cumini used as medicine to cure many diseases . During many researches it has been proved this plant has high chemical composition that cure many diseases .

1.3 Objectives

The valuable step is preliminary screening of Phytochemical. Bioactive principles present in medicinal plants and development in the detection.

Chapter-2

2.1 Methodology

Phytochemical are chemical produced by plants. It refers to the extraction, screening and identification of the medicinally active substances found in plants. Some of the bioactive substances that can be derived from plants are flavonoids, tannin, phenolic, antioxidant compounds.

2.2 Flavonoids Test

Flavonoids are called a group of plant metabolites thought to provide health benefits through cell signaling and antioxidant effects.

- Poliphenolic compounds
- Containing 15 carbon atoms
- Soluble in water

To 1ml of the crude extract, a few drops of dilute sodium hydroxide was added. Appeared on intima yellow color after that addition of few drops of dilute acid it become colorless which indicates the presence of flavonoids.

2.3 Carbohydrate test

To find the presence of glucose, starch and cellulose we can do carbohydrate test for carbohydrate test----

To 1ml of the crude extract added few drops of Naphtali after that slowly added concentrated $H_2\,So_4$ (Sulfuric Acid). If purple violet ring found that will declare the presence of carbohydrate.

2.4 Tannins test

A class of astringent, polyphonebimolecular that bind to and precipitate proteins and various other organic compounds including amino acids and alkadiols are tannins.

- To added few drops 5% feels in 1ml crude extract and observed for gene to blue green Meanscathechic tannins or blue-black means Gallic tannins.

2.5 Foam Test

The foam test measures a lubricants foaming and stability.

Took 2ml of crude extract and shake 2-3 min and wait for 5min.

2.6 Phenol Test

Phenol group compound will form blue, violet, purple, green, red, brown color after adding of aqueous ferric chloride. This reaction can be used as a test for phenol groups.

2.7 Salk Owski test

Salk Owski test is doing for cholesterol. Added 2ml crude extract after that added few drops of H_2 So_4 it becomes bluish red slowly change violet red color.

2.8 sterols and triterpene test

The sterol means B-sit sterol and triterpene mean unsolid acid I and oleanolic acid.

Added ammonia in 2ml crude extract and shake.

2.9 lead acetate test

This test is used to detect poisonous gases.

Added “3drops of lead acetate in 1ml crude extract” formation of while precipitate indicated the presence of phenolic compound.

Chapter-3

3.1 preparation of extract of Syzygium cumini:

Plant extract of each plant were prepared using water, ethanol, methanol, chloroform, N-butanol as extracting solvent.(Braz.J .Microbiology,2000).

Figure 2 : Extraction of Syzygium cumini

3.2 water extract of Syzygium cumini:

50gm of the air dried and powdered of syzgium cumini was extracted with 100ml water as 1:2 for extraction method after filtering, obtained the crude water extract.

3.3 methanol extract of Syzygium cumini:

40gm of the air dried and powdered and Syzygium cumini was extracted with 80ml methanol. After filtering finally the crude Methanol extract was obtained.

3.4 Ethanol extract of Syzygium cumini:

44gm of syzygium cumini powdered was extracted with 88ml ethanol. After filtering the crude ethanol extract was obtained.

3.5 Chloroform extract of Syzygium cumini:

30gm of Syzygium cumini powdered extract with 60ml chloroform and after filtering obtain the chloroform extract.

3.6 N-butanol extract of Syzygium cumini:

55gm of air dried Syzygium cumini powdered extract with 110ml N-butanol and after filtering N-butanol extract is obtained.

Chapter 4

Phytochemical screening of water extract

4.1 Flavonoids Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract added few drops of dilute sodium hydroxide appeared an intense reddish color after addition of few drops of dilute sulfuric acid it become colorless.

Result: Colorless which become indicates the presence of flavonoids.

4.2 Carbohydrates Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added few drops of α- naphthalene and after that slowly added concentrated H_2 So_4 (sulfuric acid).

Result : Purple violet ring found that declared the presence of carbohydrates.

4.3 Tannins Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To added few drops 5% $Fecl_3$ in 1ml water extract .

Result: It gives blue – black means Gallic tannins.

4.4 Foam Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : Took 2ml of water extract and shake 2-3 min and wait 5 min.

Result : After 5 min foam located

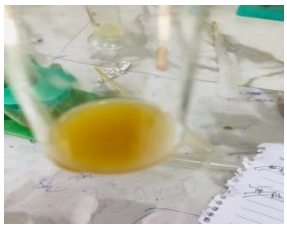
4.6 Solk Owski Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml of water extract added few drops of sulfuricacid.

Result: It gives red color means cholesterol is present.

4.7 Sterols and Triterpenoids Test:



Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml water extract added few drops of ammonia and shake.

Result: It showed yellow color means negative.

4.8 Lead Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added 3 drops of lead acetate.

Result: White precipitate located means poisonous gases presence .

Chapter 5

Phytochemical screening of Methanol extract

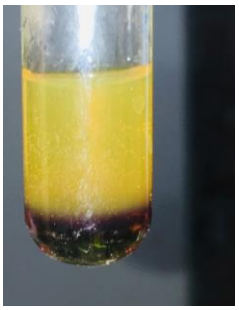
5.1 Flavonoids Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract added few drops of dilute sodium hydroxide appeared an intense greenish color after addition of few drops of dilute sulfuric acid it become yellow.

Result: Flavonoids present.

5.2 Carbohydrates Test:

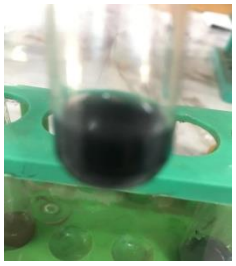


Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added few drops of α-naphthalene and after that slowly added concentrated H_2 So_4 (sulfuric acid) .

Result: No ring forming, red precipitate formed that means less carbohydrates present.

5.3 Tannins Test:



Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To added few drops 5% Fecl_3 in 1ml water extract .

Result: It gives blue – black means Gallic tannins.

5.4 Foam Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : Took 2ml of water extract and shake 2-3 min and wait 5 min.

Result : After 5 min foam was not located.

5.5 PhenolTest:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract, adding few drops of aqueous ferric chloride.

Result: It gives violet color that indicates the presence of phenol.

5.6 Solk Owski Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml of water extract added few drops of sulfuricacid.

Result : It gives red color means cholesterol is present.

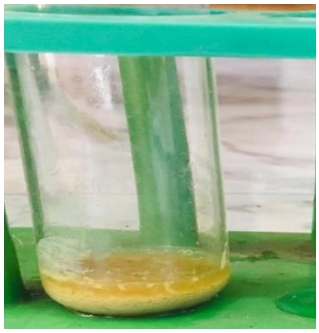
5.7 Sterols and Triterpenoids Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml water extract added few drops of ammonia and shake.

Result: It showed yellow color means negative.

5.8 Lead Test:



Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added 3 drops of lead acetate.

Result: White precipitate located means poisonous gases present.

Chapter 6

Phytochemical screening of Ethanol extract

6.1 Flavonoids Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract added few drops of dilute sodium hydroxide appeared an intense yellow color after addition of few drops of dilute sulfuric acid it become colorless.

Result: Colorless which become indicates the presence of flavonoids.

6.2 Carbohydrates Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added few drops of α-naphthalene and after that slowly added concentrated $H_2 So_4$ (sulfuric acid) .

Result : Purple violet ring not found that declared there is no presence of carbohydrates.

6.3 Tannins Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To added few drops 5% Fecl_3 in 1ml water extract .

Result: It gives blue – black means Gallic tannins.

6.4 Foam Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : Took 2ml of water extract and shake 2-3 min and wait 5 min.

Result : After 5 min foam was not located.

6.5 Phenol Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract, adding few drops of aqueous ferric chloride.

Result: It gives violet color that indicates the presence of phenol.

6.6 Solk Owski Test :

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml of water extract added few drops of sulfuricacid.

Result : It gives less red color than water extract meansless cholesterol is present.

6.7 Sterols and Triterpenoids Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml water extract added few drops of ammonia and shake.

Result: It showed yellow color means negative.

6.8 Lead Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added 3 drops of lead acetate.

Result: White precipitate located means poisonous gases present.

Chapter 7

Phytochemical screening of Chloroform extract

7.1 Flavonoids Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract added few drops of dilute sodium hydroxide appeared an intense a layer shows colorless at upper layer after addition of few drops of dilute sulfuric acid yellow color showed at lower layer.

Result: Colorless which become indicates the presence of flavonoids.

7.2 Carbohydrates Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added few drops of α-naphthalene and after that slowly added concentrated $H_2 So_4$ (sulfuric acid) .

Result : Purple violet ring found that declared the presence of carbohydrates.

7.3 Tannins Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To added few drops 5% $Fecl_3$ in 1ml water extract .

Result: No color change means there was no presence of tannins.

7.4 Foam Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : Took 2ml of water extract and shake 2-3 min and wait 5 min.

Result : After 5 min foam was located.

7.5 Phenol Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract, adding few drops of aqueous ferric chloride.

Result: No color change that indicates there was no presence of phenol.

7.6 Solk Owski Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml of water extract added few drops of sulfuric acid.

Result : It gives red color at upper layer colorless at lower layer that means cholesterol presence.

7.7 Sterols and Triterpenoids Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml water extract added few drops of ammonia and shake.

Result: It showed yellow color at upper layer and colorless at lower layer means negative.

7.8 Lead Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added 3 drops of lead acetate.

Result: White precipitate located upper layer and colorless layer at lower layer that means poisonous gases present.

Chapter 8

Phytochemical screening of n-butanol extract

8.1 Flavonoids Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract added few drops of dilute sodium hydroxide appeared an intense a layer shows yellow at upper layer after addition of few drops of dilute sulfuric acid colorless showed at lower layer.

Result: Colorless which become indicates the presence of flavonoids.

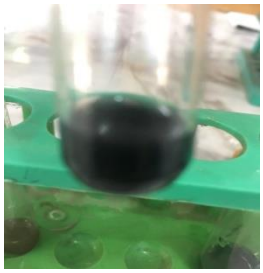
8.2 Carbohydrates Test:

Apparatus: Test tube, Beaker, Funnel, Conical flask, measuring cylinder.

Procedure : To 1ml of water extract added few drops of α-naphthalene and after that slowly added concentrated H_2 So_4 (sulfuric acid) .

Result : Purple violet ring found that declared the presence of carbohydrates.

8.3 Tannins Test:



Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To added few drops 5% Fecl_3 in 1ml water extract .

Result: Blue-green color found that means cathechic tannins presence.

8.4 Foam Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: Took 2ml of water extract and shake 2-3 min and wait 5 min.

Result: After 5 min foam was not located.

8.5 Phenol Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 1ml of the water extract, adding few drops of aqueous ferric chloride.

Result: Violet color found that indicates there was the presence of phenol.

8.6 Solk Owski Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml of water extract added few drops of sulfuric acid.

Result : It gives red color layer that means cholesterol presence.

8.7 Sterols and Triterpenoids Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure: To 2ml water extract added few drops of ammonia and shake.

Result: It showed yellow color at upper layer and colorless at lower layer means negative.

8.8 Lead Test:

Apparatus : Test tube, Beaker, Funnel, Conical flask, Measuring cylinder.

Procedure : To 1ml of water extract added 3 drops of lead acetate.

Result: yellow precipitate located at lower layer and colorless layer at lower layer that means poisonous gases present.

Comparative analysis of Phytochemical constituents of three different species Syzygiumcumini:

Phytochemical test	**Water extract**	**Methanol extract**	**Ethanol extract**	**Chloroform extract**	N-Butanol
Flavonoids Test	Positive + + +	Positive + +	Positive + +	Positive + +	Positive +
Carbohydrates Test	Positive + + +	Positive +	Negative -	Positive + +	Positive + +
Tannins Test	Positive + + +	Positive + + +	Positive + +	Positive + +	Positive + +
Foam Test	Positive + +	Negative -	Negative -	Positive +	Negative -
Phenol Test	Positive + + +	Positive + + +	Positive + + +	Positive + +	Positive +

Solkowski Test	Positive + +	Positive +	Negative -	Positive +	Positive +
Sterols and Triterenoids Test	Negative -	Negative -	Negative -	Negative -	Negative -
Lead Test	Positive + + +	Positive + + +	Positive + + +	Positive + +	Positive + +

Chapter 9

Conclusion

The seed of the Syzygium cumini is used in various alternative healing system like Ayurveda, Unani and Chinese Medicine . The extract of this seeds are very effective against hyperglycemia in diabetic rats . From this Fruits wine , vinegar also made and it has also a high source of vitamin A and vitamin C.

Reference :

Dr. S. Karuppusamy , May 2014,Phytochemical analysis and evaluation of the medicinal herb, Hypochaeri radicatal , for in vitro antioxidant activities, Asian Pac J Trop Biomed, 4(suppl 1) : S359-S367.

Dr. Muniappan AAyyanar, Mar 2012,Syzygium cumini(L.) skeels: A review of Phytochemical constituents and traditional uses, Asian Pac J Trop Biomed, 2(3) : 240-246

Drummond ; A.J, Waigh, R.D, 2000,The development of microbiological method for Phytochemical screening, CABdirect.org.

Farsi E, Majid AS, Majid AM.Clinacanthus natans, May 2016, American Journal of Phytocheical therapeutics , 7:113-26 .

Gislene G.F ,2000,Antrimicrobial activity of plant extract and Phytochemicals on antibiotic resistance , Braz.J.microbial.

Hindaw,2017, Preliminary Phytochemical screening Quantitative and Qualitative analysis alkaloids and antioxidant activity from plant extract,The scientific world journal.

Ken Fern, 2019,Useful tropical plants, tropical.the ferns. Info.