Phytochemical Profiling and Pharmacological evaluation of Methanol extract of MOMORDICA CHARANTIA SEEDS

Submitted To

Department of Pharmacy

Daffodil International University

Submitted By

Niloy Paul

ID: 151-29-803

Batch: 13th (A)

Department of Pharmacy

Daffodil International University

Dedicated to my- - -

Parents

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APPROVAL

This thesis, Phytochemical Screening and Pharmacological Studies on Bark Extracts of Momordica Charantia. submitted to the Department of Pharmacy, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy and approved as to its style and contents.

BOARD OF EXAMINERS

Dr. Sharif Mohammad Shaheen
Head of the Department
Professor and Head
Department of Pharmacy
Faculty of Allied Health Sciences
Daffodil International University

Internal Examiner-1

Internal Examiner-2

External Examiner

DISSERTATION ACCEPTANCE FORM DAFFODIL INTERNATIONAL UNIVERSITY DEPARTMENT OF PHARMACY

Certificate

This is to certify that the results of the investigation that are embodied in this thesis works are original and have not been submitted before in substance for any degree or diploma of this university. The entire present work submitted as a thesis work for the partial fulfillment of the degree of masters of pharmacy.

Supervised by

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MRS.SABREENA CHAWDHURY RAKA
LECTURER (SENIOR)
DEPARTMENT OF PHARMACY
DAFFODIL INTERNATIONAL UNIVERSITY

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Abstract

The purpose of this study has to investigate the presence of major phytochemicals and antioxidant effects of the methanolic extract of the seeds of **Momordica Charantia**.Phytochemical analysis of **Momordica Charantia**, displayed the presence of alkaloids,saponinsand tannin types of compounds.The results indicated that the extract has moderate phythochemical screening, cytotoxic and thrombolytic activities. Crude extract has a long history of use for infectious diseases was assessed for free radical scavenging activity.

Chapter -1

Introduction

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1.0 Primery information:

Medicinal plants can play an important rule for prevenvation of many disease of human and different kind of animals. These plants are found in the whole world.People were used this type of plant in many years ago. Some of those plants are still used today are same way and same humans and animals needs. Firtly the test of phythochemical is performed then the plant drug is applied in many animal and when all the research is completed the further study is started on the human being. New sources of plant are also investigated.

1.1 Medicinal plants condition in Bangladesh:

In our country different types of medicinal plant are found. About five hundrds plants are found in everywhere in our country. In many rural areas peoples are still
now depended on the medicinal plants. About 85 percent of the peoples are depends on the medicinal plants for primery health care. There are 420 herbal medicianal company using herbal plants as a raw materials, most of the materials
are imported from the abroad cause our caountry have not enough industry to produce these type of raw materials.

1.2 Benifits of herbal and medical plants:

Many plants are used as traditionaly because they produce less side effests. Once upon a time people were fully depended on this type of plants. The uses of medicinal plants for curing of diseases and it had been documented in history of all
civilization. Many disease medicine have been made from this type of plant. It is less expensive than any other drug. So its used not fully deacreased in modern day.

1.3 Significance of medicinal plant study:

A huge number of population in our country were dependent on ayurvedic treatment for maintaining their good health. Herbal drugs are popular day by day
For their good value to prevent the disease. There are a demand now a days for madicinal plant based medication and health products, pharmaceuticals, cosmetics in the internation and nation market.

1.4 Thrombosis:

It means lacal coagulation or clotting of the blood in a part of the circulatory system.

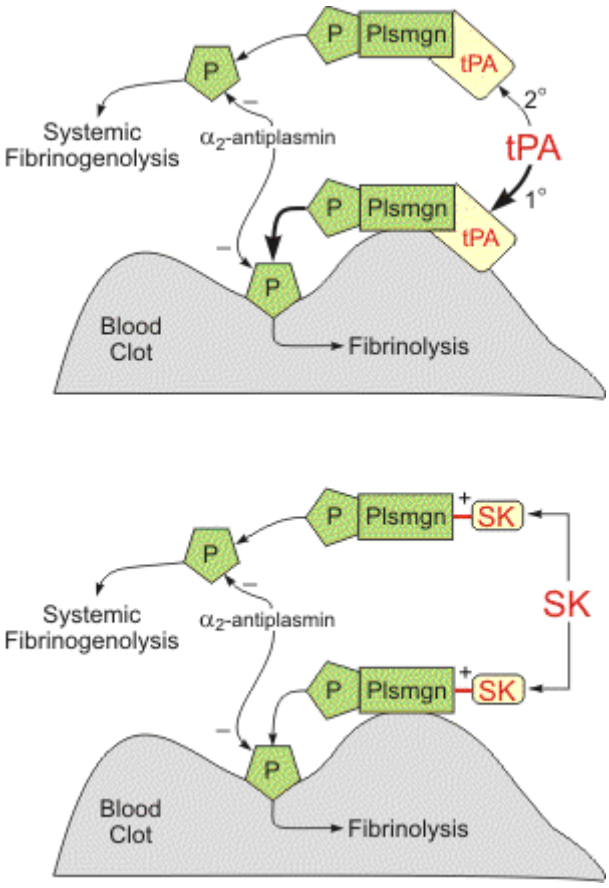
1.5 Types of thrombosis:

It is mainly formed by two types, each type could be presente by several sub-types.
i.Venous thrombosis ii. Arterial thrombosis.

1.6 Thrombolytic agent:

It is a one type of drug which have the ability to dissolve a clot and reopen an artery vein.This type of agent may be used in the treatment of heart attuck, stroke,pulmonary embolism etc.

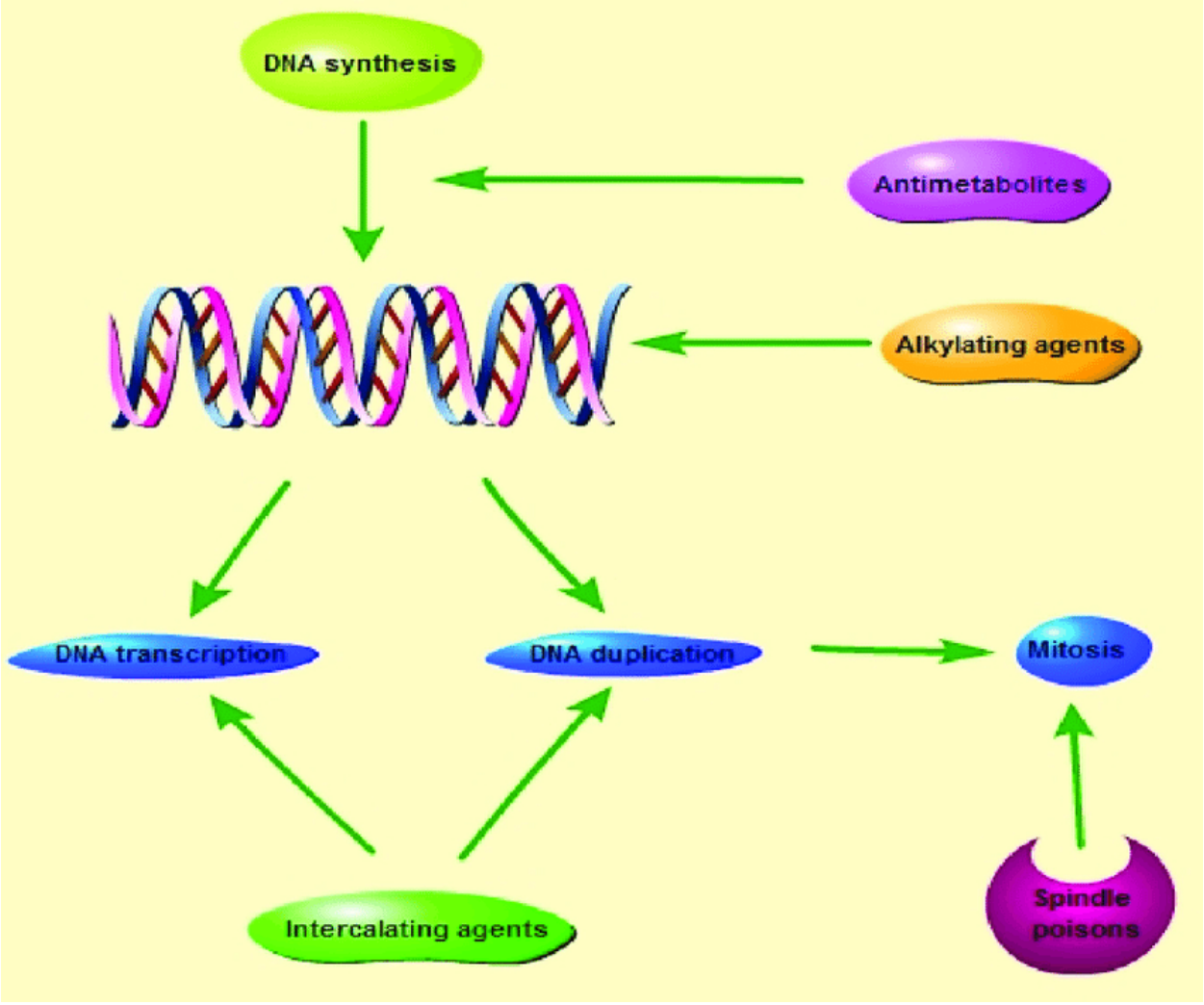
1.7 M\A of Streptokinase:



1.8 Cytotoxicity:

It means ability to toxic the cells. Examples, from the puff adder.

1.9 M\A of cytotxic agents:



Chapter- 2

Plant Profile

Chapter-2 PLANT PROFILE

2.0 Plant name:

Scientific name: Momordica Charantia.
English name: Bitter malon, bitter apple etc.
Bnagli name : Korolla.

2.1 Taxonomical types:

Kingdom: plantae
Subkingdom: Tracheobionta
Subdivision: Spermatophyta
Division: Magnoliophyta
Class: Mgnoliopsida
Subclass: Dilleniidae
Order: Violales
Family: Cucurbitaceae
Genous: Monordica L.
Species: Monordica Charantia

2.2 Photos of different parts of monordica charanti

Leaves **Flower** **Fruit** **Seeds**

Fig: Different parts of Momordica charantia

2.3 In geraral overview about monordica charantia:

Plant: The plant height is up to 5m in length.

Leaves: It is simple and 2-4 cm across.

Fruit and seesds: The fruit have a distinct are oblong in shape, and its seeds are green in color.

Abilibality: It is found anywhere in banglesh and other country in the world.

2.4 Used plant parts:

i.Leaves ii. Seeds iii. Fruit iv. Flowers.

2.5 Important benifits It is used as a vegetables, and its works as a primary teatment of many diseIt is also important to formulation of herbal medicine. It is used for the prevention of cancer, HIV, AIDS etc.

Chapter- 3

Methods and Mterials

3.0 Materials of plant:

The main plant seeds was collected from karwan bazar, Dhaka.

3.1 Drying and grinding process:

At first the seeds are collect from market then it is drying in the room tempersturee about 20 days, after drying is completed the seeds are collected and make it powdered form by the use of suitable grinder. The powder then stored in the container.

3.2 Process of the preparation of crude extract:

3.2.1 Cold extraction: I am used 400 gram poweder sample and taken it clean flat bottomed galss container and socked it in 700ml methanol. The container is kept about 9 days, daily shacking of the container is mendatory.

3.2.2 Evapuration of solvent:

The filtrate was kept and then taken it into the rotary evapurator to evapurate it.

3.3 Test materials for phythochemical screening method:

Seeds extract of momordica chaarantia.

3.3.1 Reagents for chemical group tests:

i. meyers reagent

ii. Fehling solution II

iii. Dragendroffs reagent

iv. Distilled water

v. Molish reagent

vi. Methanol

vii. Ferric chloride

3.3.2 Test of glycosides:

The extract solution was taken 2 ml in a test tube then mixed 1ml of fehling solution A and B. The test tube was placed in a water bath at 60 degree temprature, if the brick red ppt is shows the presence of glycosides is ensured.

3.3.3 Test of alkaloids:

The extract solution was taken 0.5g with stirred in a 5ml of 1% aqueous hydrochloric acid on water bath, then few drops of meyers reagent was added after adding this the degendroffs reagent was added. If orange brown ppt is formed then it is ensure to presence of alkaloids.

3.3.4 Test of saponins:

The 5ml plant extract was taken in a test tube and it was diluted with distilled water. The mixture was shaken vigrously. After 15 minutes the emulsion type of saponin was formed.

3.3.5 Test of tennins:

The extract was taken 5g and it stirred with 10ml distilled water, then the ferric chloride added. If the blue black, green precipitate is found then the presence of tannins was ensured.

3.4 Thrombolytic activity test process:

It is the lysis of blood clots by pharmacological means, and commonly it is called clot busting. It is working by stimulating secondary fibrosis by plasmin through infusion of anallogous of tissue plasminogen activatir, the protein that normally activates plasmin.

3.5 Cytotoxic test materials:

i. brine shrimp eggs

ii. micro pipetts

iii. test tube

iv. volumetric flask

v. light

vi. beaker

vii. table salt

vii. pure NaCl

viii. stand to set bottle

ix. air stone

x. air pump etc.

3.5.1 Test methodsi.preparation of sea waterii. construction of hatcheryiii. hatching of brine shriiv. preparation of stock solutionv. the shrimp naupii in the test tube

Chapter – 4

Results and Discussion

Chapter-4 Results & Discussion

4.0.Result of Phytochemical Screening:

Results of the phytochemical screening of the methanol extract of seeds of momordica charantia*:*

Table.2 -Phytochemical test results of seeds extract of momordica charantia

Tested groups	**Ethanol extract of** momordica charantia
Tannins	+
Alkaloids	+
Glycosides	+
Saponins	+
Phenolic	+
Carbohydrate	+

Note: + = Indicates the presence of the tested group, − = Indicates the absence of the tested group. The tests identify the presence of Tannins, Alkaloids, Glycosides, Flavonoids,Phenolic, Carbohydrate in methanol extract of momordica charantia.

4.1.Thrombolytic activity test:

Table – 8: Thrombolytic activity (in terms of % clot lysis) of momordica charantia

Sample	Blank tube weight (gm)	1st clot + tube weight (gm)	1st clot weight (gm)	2nd clot + tube weight (gm)	2nd clot weight (gm)	% of lysis
Standard (Streptokinase)	0.838	1.663	.825	.9335	.0955	***88.49%***
Control (Distil water)	0.824	1.456	0.632	1.390	0.066	***10.44%***
Perocarpus indicus Will ethyl acetate leaves extract	0.820	1.471	1.08	1.350	0.59	***36.66%.***

SK = Streptokinase [positive control].
ME = Methanol extract,
Blank = Water as negative control.

The addition of 100 µl SK, a positive control (30,000 IU), to the clots and subsequent incubation for 90 minutes at 37°C, showed ***88.49%*** lysis of clot. On the other hand, distilled water was treated as negative control which exhibited a negligible percentage of lysis of clot ***10.44%.*** The mean difference of in percentage of clot lysis between positive and negative control was found to be statistically significant. In this study *Perocarpus indicus Will.* displayed highest thrombolytic activity ***36.66%.***

4.2.Cytotoxic Activity:

The results of the cytotoxic effect of the extract of ethyl acetate *glochidion thomsonii*.is given below:

Table.2:- Results of cytotoxic study of momordica charantia against brine shrimp nauplii:

Serial no.	Control		Standard		Ethyl acetate extract	
	No. of Alive	No. of Death	No. of Alive	No. of Death	No. of Alive	No. of Death
01.	09	01	00	10	00	04
02.	08	02	00	10	00	03
03.	08	02	00	10	00	03
04.	09	01	00	10	01	03
05.	08	02	02	08	03	05
06.	08	02	03	07	04	07

The mortality rate of the brine shrimp was founded to be increased with the increasing of concentration of the extract and plotting of Concentration versus Response percentage put on the Ldp Line software produced an approximate linear correlation between them. The concentration at which 50% mortality(LC_{50}) of brine shrimp nauplii caused by the test extract were calculated from the graph by extrapolation and was found LC_{50} below in table.

4.3.1Table.3:- Result of cytotoxic activity test

Group	LC_{50} Value (mg/mL)
Control	**1656.1528**
Standard	**0.0171**
Ethanol Extract	**1.987**

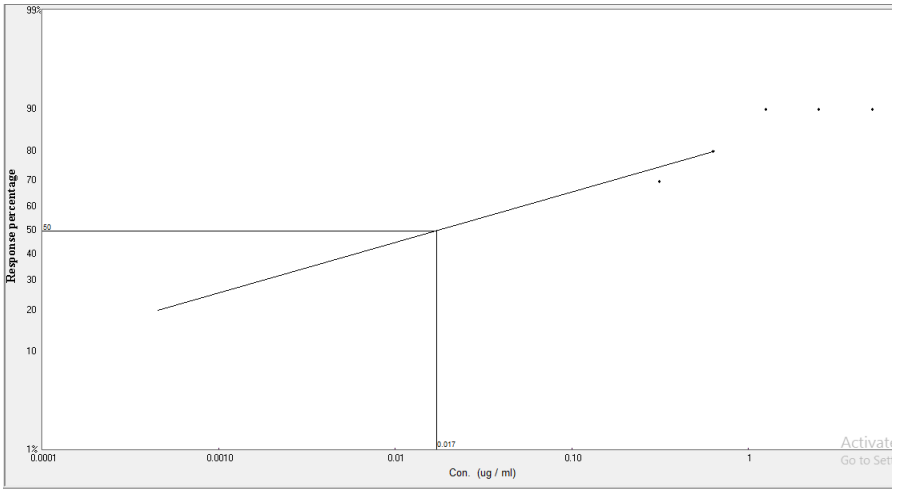


Fig-1: LC_{50} curve of con

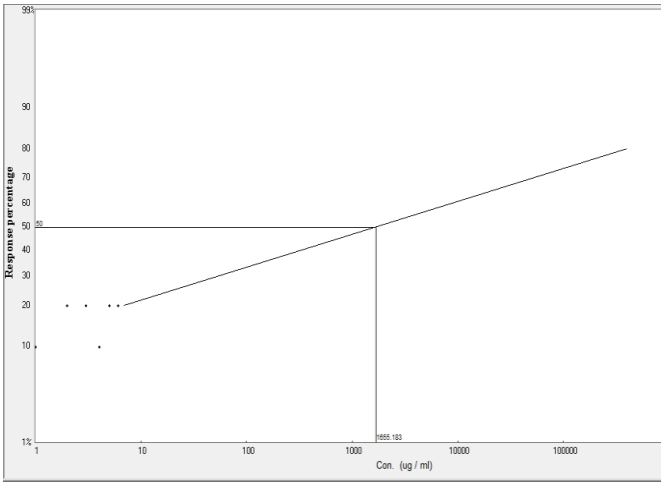


Fig-2: LC_{50} curve of standard

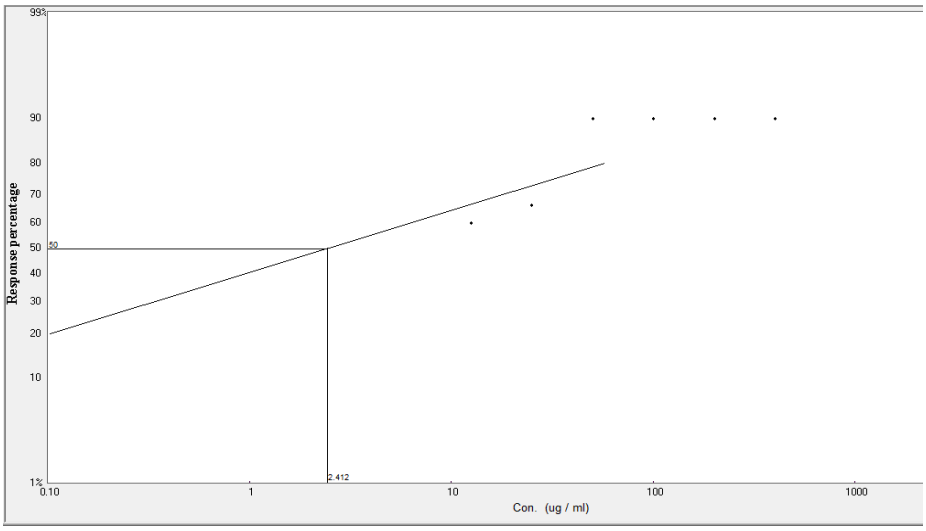


Fig-3: LC_{50} curve of methanol extract

4.3.Discussion:

The brine shrimp lethality is a simple, rapid and convenient method for identifying biological activity having cytotoxicity in the crude extract. The methanolcrude extract of. **Momordica Charantia** shows moderate activity against the nauplii. The LC_{50}value of methanolextract was 1.987 mg/mL comparedwith the LC_{50} value of standard (0.0171 mg/mL). Threfore, the response obtained in this assay suggests that the extract may contain cytotoxic compounds. However, this can't be confirmed without further higher and specific tests. So, further investigations are needed to get more information about the activities of the plant.

4.4.Conclusion:

For thousands of years there have been plants in Asia used for medicinal purpose, while many studies have attempted to prove scientifically on these medicinal plants. **Momordica Charantia** *is* one of the important medicinal plants among them. Hence, further studies are required to find out more pharmacological activities of this plant.

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