

Phytochemical Scening of *Lagenaria Sicerariapp* Herbal Medicinal Plant

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Abstract

Phytochemicals are natural bioactive compounds produced by plants as secondary metabolites. The phytochemical extracts obtained from the mature Nigerian grown short-hybrid bottle gourd (*Lagenaria siceraria*) was examined in this study. The fruit of *Lagenaria siceraria* was collected from vegetable market in the month of June from Bhopal, Madhya Pradesh, India. Ethanolic extract was used for phytochemical study of *Lagenaria siceraria*.

Key Words: Phytochemicals, secondary metabolites, Whole plant, Root, Seed, Flower, Bark.

Introduction

Plants have the ability to synthesize the wide varieties of the chemical compounds that are used to perform important biological function, so as to defend against the attack from predator such as insects, fungus and herbivorous mammals. Many of them have the beneficial effect on long term health, when it consumed by human. It is founded that at least 12,000 such compounds has been isolates so far, this is less than the 10% of the totals. These phytochemical are divided into the two types (1) Primary metabolite like sugar and fats; and (2) Secondary metabolites compound which are founds in smaller ranges of plants for serving more specific functions.¹ For example, some of the secondary metabolites are toxin used to determine predation and other are pheromones used to attracts insect for the pollination. This is the function of the process

These are secondary metabolites and pigment that can have the therapeutic action in human, which can be refined to produce drug—example are inulins from the roots of dahlias, quinines from the cinchona, morphine's and codeines from the poppy, and the digoxin from the foxglove. In plants chemical compounds mediate their effects on the human body through processes identical to those already well understood for the chemicals compound in conventional drugs, therefore herbals medicine do not differ greatly from conventional drug in the manner of how they work. This enables herbals medicine to be as effective as the conventional medicine along with same potentials to cause harmful side effects.²

Methodology

Collection of Plant material

The fruit of *Lagenaria siceraria* was collected from vegetable market in the month of June from Bhopal, Madhya Pradesh, India

Preparation of *Lagenaria siceraria* fruit extract

Extraction of fruit of *Lagenaria siceraria* was done by Soxhlet extraction method.

apparatus was used for the solvent extraction and ethanol was selected as a solvent for extraction while petroleum ether was used for defatting of the waxy materials

Phytochemical analysis of crude extract

The crude extract obtained by solvent extraction was subjected to various qualitative tests with standard reported methods to detect the presence of common phytochemical constituents. All the chemicals and reagent used in phytochemical testing was of analytical grade.

Tests for Alkaloids

Dragendorff's test

In the pipette 1 ml of extract and 1 ml of Dragendorff's reagent (potassium bismuth iodide solution) was added.

An orange-red precipitate were appeared which indicated the presence of alkaloids.

Mayer's test

In the pipette 1 ml of extract and 1 ml of Mayer's reagent (Potassium mercuric iodide solution) were added. Whitish yellow or cream colored precipitate precipitate indicated the presence of alkaloids.

(B) Tests for Glycosides

Legal's test

Dissolved the extract in pyridine and then added sodium nitroprusside solution to make it alkaline. Pink to red color was not appeared which indicated the presence of glycosides.

Baljet's test

To 1ml of the test extract, 1ml of sodium picrate solution was added and the yellow to orange color revealed the presence of glycoside.

(C) Tests for Carbohydrate

Benedict's test

To 5ml of Benedict's reagent, 1ml of extract solution was added and boiled for 2 minutes and cooled. Formation of red precipitate indicated the presence of sugars.

Molisch's test

A small fraction from the extract was taken in ethanol separately and a few drops of 20% w/v solution of α -naphthol in ethanol (90%) were added to it. After shaking well, about 1 ml of concentrated sulphuric acid was allowed to flow carefully by the side of the test tube. A

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reddish violet ring at the junction of the two layers indicated the presence of carbohydrates.

(D) Tests for Steroids

- **Salkowski test**

The extract was dissolved in chloroform and equal volume of conc. H₂SO₄ was added. Formation of bluish red to cherry color in chloroform layer and green fluorescence in the acid layer represents the steroidal components in the tested extract.

- **Liebermann-Burchard test**

A small portion from extract was taken with about 1 ml of acetic anhydride and dissolved by warming. The contents were cooled and a few drops of concentrated sulphuric acid were added in each case by the sides of the test tube. Appearance of blue colour indicated the presence of sterols.

(E) Test for Proteins

- **Biuret test**

Add 1ml of 40% sodium hydroxide solution and 2 drops of 1% CuSO₄ solution till a blue color is produced, and then add to the 1ml of the extract. Formation of pinkish or purple violet color indicates the presence of proteins.

(F) Tests for Saponins

A little fraction from the extract were boiled with about 1 ml of distilled water and shaken. Appearance of a characteristic foam formation indicated the presence of Saponins. Aqueous and alcoholic extract were tested directly.

A little fraction from extract was taken with about 2 ml of distilled water. A small quantity of sodium carbonate was added to each and shaken. The characteristic foam formation indicated the presence of Saponins. Aqueous and alcoholic extract were tested directly.

(G) Test for Phenolic Compounds and Tannins

i) Take the little quantity of extract and mixed with basic lead acetate solution. Formation of white precipitates indicates the presence of tannins.

ii) To 1 ml of the extract, add ferric chloride solution, formation of a dark blue or greenish black colour product shows the presence of tannins.

iii) The little quantity of extract is treated with potassium ferric cyanide and ammonia solution. A deep red colour indicates the presence of tannins.

iv) To the extract, add strong Potassium dichromate solution, a yellow colour precipitate indicates the presence of tannins and phenolics.

(H) Tests for Flavonoids

- **Shinoda test:** To the extract add few magnesium turnings and concentrated hydrochloric acid drop wise, pink scarlet, crimson red or occasionally green to blue colour appears after few minutes.

- **Alkaline reagent test:** To the extract add few drops of sodium hydroxide solution, intense yellow color

is formed which turns to colorless on addition of few drops of dilute acid indicate presence of Flavonoids.

Lead acetate Test: Extracts were treated with few drops of lead acetate solution. Formation of yellow colour precipitate indicates the presence of flavonoids.

Result

Table No. 1:- Morphological characteristics of *Lagenaria siceraria* fruit

S. No.	Character	Observation
1	Color	Green
2	Odour	cucurbitales
3	Taste	Light sour
4	Size	Variable
5	Texture	Smooth

Table No. 2:- Consistency and color of *Lagenaria siceraria* fruit extract

Extract	Color	Consistency	Percentage Yield
Ethanolic	Light Brown	Semisolid	11.4 %

The dried powder of plants was extracted with 70% v/v hydro alcoholic solution. The solvents were removed by distillation under reduced pressure and the resulting semisolid mass was vacuum dried using rotary flash evaporator to obtain the extract. The percentage yields of various extract were presented in Table.

The Ethanolic extracts obtained were subjected to preliminary phytochemical screening. The extraction was carried out with ethanolic solution the extract was screened for the presence of various medicinally active constituents which was tabulated in Table No-3.

Physicochemical studies revealed that major active constituent are present in extract like alkaloids, Carbohydrate, Tannins, Alkaloids, and Proteins and Amino Acids as a major component.

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Table No.3:- Phytochemical screening of ethanoli extract of fruit of *Lagenaria siceraria*

S. No.	Chemical Tests	Ethanolic extract
1	Carbohydrates i) Molisch's Test ii) Fehling's Test iii) Benedict's test	(+) (+) (+)
2	Tannins i) with 5% ferric chloride solution ii) with 10% aqueous Potassium dichromate solution iii) with 10% lead acetate solution	(+) (-) (-)
3	Alkaloids i) Dragendorff's Test ii) Mayer's Test iii) Hager's Test	(-) (+) (+)
4	Glycosides i) Borntrager's Test ii) Legal Test iii) Baljet Test	(+) (-) (+)
5	Flavonoids i) Shinoda's Test ii) Alkaline reagent test iii) Lead test	(+) (+) (+)
6	Steroids and Sterols i) Libermann-Burchard Test ii) Salkowski Test	(+) (-)
7	Proteins and Amino Acids i) Biuret Test ii) Ninhydrin Test iv) Millon's Test	(-) (+) (+)