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**PRELIMINARY PHYTOCHEMICAL SCREENING OF ETHANOLIC
AND AQUEOUS EXTRACTS OF LEAVES OF *COCHLOSPERMUM RELIGIOSUM***

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ABSTRACT

Medicinal plants have bioactive constituents used to treat various diseases. In the present investigation include study of medicinal plant *Cochlospermum religiosum*. Ethanol, Distilled water with chloroform was used to obtain extracts from the plant leaves produced. Extracts were subjected to phytochemical marker tests standard procedure. Phytochemical examination revealed the presence of Alkaloids, Saponins, Tannins, Steroids, Glycosides and Flavonoids.

Keywords: *Cochlospermum religiosum*, Phytochemical screening, Medicinal plants, Leaves

INTRODUCTION

Nearly 80% of the world's population relies on traditional medicines for primary health care, most of which involve the use of plant extracts. In India almost 95% of the prescriptions were used in Unani, Ayurveda, Homeopathy and Siddha [1]. Medicinal and aromatic plants are potential source of raw materials used for manufacture of drugs and

perfumery products more than a quarter of all the medicines used in the world today contain natural compounds derived from plants that often serve lead molecules whose activities can be enhanced by manipulation through combinations with chemicals and by synthetic chemistry that can be exploited in the field of new drugs research and

development [2, 3]. Phyto constituents are the natural bioactive compounds found in plants. This phytoconstituents work with nutrients and fibers to form an integrated part of defense system against various diseases and stress conditions [4]. Phyto chemicals are basically divided into two groups, i.e. primary and secondary constituents; according to their functions in plant metabolism. Primary constituents comprises common sugars, amino acid, proteins and chlorophyll while secondary constituents consists of alkaloids, terpenoid, steroids and flavonoids, so on.

Cochlospermum religiosum is a very beneficial tree and is used from very ancient times in India for curing a lot of ailments. Gum of *Cochlospermum religiosum* is used for stomachic, sedative, gonorrhoea, syphilis and asthma [5].

Paste of stem bark is applied over the bone fractured areas [6]. The herb vendors sell the bark of *Cochlospermum religiosum* as a remedy to diabetes. It is used in combination with kalimirch [7]. Powder of bark is used with water during jaundice [8].

Cochlospermum religiosum (Synonyms: *Bombax gossypium* L., *Bombax religiosum* L., *Cochlospermum balicum* Boerl., *Cochlospermum gossypium* DC., *Maximiliana gossypium* (DC.) Kuntze, *Wittelsbachia gossypium* Mart. &

Zucc. [9-13], is a plant having a place with family Bixaceae [14-16].

MATERIALS AND METHODS

Collection and identification of plant

The leaves of *Cochlospermum religiosum* was collected in the month of July 2016 from local areas of Indore (M.P.) and were identified and authenticated by Dr. S.N. Dwivedi, Prof. and Head, Department of Botany, Janata PG College, A.P.S. University, Rewa, M.P., India. what's more, kept in our Laboratory, Voucher example No. J/BOT/H-138.

Preparation of plant extracts

The dried powder of leaves of *Cochlospermum religiosum* and *Plumeria obtusa* and bark of *Cordia macleodil* were separated with Ethanol (95%) in a soxhlet apparatus. Aqueous extract was set up by cold maceration process by utilizing separate amount of powder. The solvents were evacuated by refining under diminished weight and the subsequent semisolid mass was vacuum dried utilizing rotary flash evaporator. [17]

Phytochemical screening

Phytochemical screening was performed to identify phytochemicals in the Ethanolic and Aqueous extracts of *Cochlospermum religiosum* leaves exposed to following test to decide the presence of phytoconstituents.

Tests for carbohydrates and glycosides

A small quantity of the extracts was dissolved individually in 4 ml of distilled water and filtered. The filtrate was exposed to Molisch's test to find out the presence of Carbohydrates.

Molisch's test

Filtrate was treated with 2-3 drops of 1% alcoholic α - naphthol arrangement and 2 ml of Conc. sulphuric acid was included at the edges of the test tube. Appearance of dark colored ring at the intersection of two fluids demonstrates the presence of carbohydrates.

Another bit of the extract was hydrolyzed with hydrochloric acid for couple of hours on a water bath and the hydrolysate was exposed to Legal's and Borntrager's test to distinguish the presence of various glycosides.

Legal's test

To the hydrolysate 1 ml of pyridine and couple of drops of sodium nitroprusside solutions were added and then it was made alkaline with sodium hydroxide solution. Appearance of pink to red colour indicates the presence of glycosides.

Borntrager's test

Hydrolysate was treated with chloroform and then the chloroform layer was removed. To this, equal quantity of dilute ammonia solution was added. Ammonia layer acquires

pink color, showing the presence of glycosides.

Test for alkaloids

A small section of the solvent free pet ether, alcohol extracts were stirred individually with few drops of dil. hydrochloric acid and filtered. The filtrate was tested with number of reagents for the presence of alkaloids. The reagents are following:

Dragondroff's reagent: Reddish brown ppt

Wagner's reagent: Reddish brown ppt

Mayer's reagent: Cream color ppt

Hager's reagent: Yellow ppt

Test for proteins and free amino acids

Small quantities of the extracts were dissolved in few ml of water and treated with following reagents and observed.

Million's reagent: Appearance of red color shows the Presence of protein and free amino acid.

Ninhydrin reagent: Appearance of purple color shows the presence of proteins and free amino acids

Biuret's test: Equal volumes of 5% sodium hydroxide solution & 1% copper sulphate solution was added. Appearance of pink or purple color shows the presence of proteins and amino acids.

Test for phenolic compounds and tannins

Small quantities of the extracts were taken individually in water and test for the presence

of phenol compounds and tannins was carried out with the following reagents.

1. Dil. Ferric chloride solution (5%): Violet color.
2. 1% solution of gelatin containing 10% sodium chloride: White ppt
3. 10% lead acetate solution: White ppt

Test for flavonoids

With aqueous sodium hydroxide solution

Blue to violet colour (anthocyanins) yellow colour (flavones), yellow to orange (flavonones)

With con. sulphuric acid

Yellow orange colour (anthocyanins) yellow to orange colour (flavones) orange to crimson (flavonones)

Shinoda's test

Small quantities of the extract were dissolved in alcohol, to them piece of magnesium followed by Con: hydrochloric acid drop wise added and heated. Appearance of magenta color shows the presence of flavonoids.

Tests for fixed oils and fats

Spot test

Small quantities of various extract were separately pressed between two filter papers. Appearance of oil stain on the paper indicates the presence of fixed oil.

Few drops of 0.5 N alcoholic potassium hydroxide were added to a small quantity of various extracts along with a drop of phenolphthalein, the mixture was heated on a water bath for 1-2 hours, soap formation or partial neutralization of alkali indicates the presence of fixed oils and fats.

Tests for steroids and triterpenoids

Libermann-Burchard test

Treat the extract with couple of drops of acetic anhydride, boil and cool. Then add con. sulphuric acid from the side of test tube, dark brown ring is formed at the junction two layers and upper layer turns green which shows presence of steroids and formation of deep red colour indicates presence of triterpenoid.

Salkowski test

Treat the extract with few drop of con. Sulphuric acid, red colour at lower layer indicates presence of steroids and formation of yellow coloured lower layer indicates presence of triterpenoids.

Test for mucilages and gums

Small quantities of extract were added separately to 25 ml of absolute alcohol with constant stirring and filtered. The precipitates was dried in oil and examined for its swelling property for the presence of gum and mucilage.

Little amounts of extract were added independently to 25 ml of absolute alcohol with steady mixing and filtered. The precipitates was dried in oil and inspected for its swelling property for the nearness of gum and mucilage.

Test for waxes

To the test solution add alcoholic alkali solution, waxes get saponified. [17-21]

RESULTS AND DISCUSSIONS

The extracts of the plant of *Cochlospermum religiosum* were subjected to phytochemical screening which reveals the presence of various pharmacological active compounds.

Ethanollic extract: Fixed oils & fats, tannins, flavonoids

Aqueous extract: Alkalioids, carbohydrates, tannins and flavonoids.

Table 1: Preliminary phytochemical screening of *Cochlospermum religiosum*

Sr. No.	Constituents	Tests	Ethanollic Extract	Aqueous Extract
1.	Carbohydrate	Molish's test	-	+
2.	Glycoside	Borntrager's test	-	-
		Legal's test	-	-
3.	Fixed oil & fats	Spot test	+	-
		Soap formation test	-	-
4.	Proteins & amino acids	Million's test	-	-
		Ninhydrin test	-	-
		Biuret test	-	-
5.	Mucilage & Gum	Ppt with 90% alcohol	-	-
6.	Tannins	FeCl ₃ test	-	-
		Lead acetate test	+	+
7.	Steroids	Salkowski test		
		Liebermann burchard test		
8.	Alkaloids	Dragendroff's test		
		Mayer's test	+	
		Wagner's test	+	+
9.	Triterpenoids	Salkowski test	-	-
		Liebermann burchard test	-	-
10.	Flavonoids	Alkaline reagent test	+	+
		Shinoda's test	+	+
11.	Wax	Ppt. with alcoholic KOH	-	-

CONCLUSION

Preliminary phytochemical screening of leaves of *Cochlospermum religiosum* was carried out which revealed the presence of various active phytoconstituents.

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