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Research Article

PHYTOCHEMICAL SCREENING OF CNIDOSCOLUS QUERCIFOLIAS

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Abstract

Cnidoscolus quercifolius is a species popularly known as favela and faveleira, and belonging to the Caatinga biome (semi-arid vegetation, Brazil), where is used in folk medicine as an anti-inflammatory and hepatoprotective activity. A preliminary analysis of plant extract revealed that, phytochemicals test was done on the alcoholic extract of Cnidoscolus Quercifolias leaf and it is found to be rich in Carbohydrates, Proteins, Saponin, Flavonoids and Phenolic compound. It can be concluded that extracts from the leaves of C . quercifolius have anti-inflammatory activity, which supports the popular use of this plant to treat tumors. The roots, bark and latex are used for the treatment of inflammatory processes, genitourinary and in general as antiseptic, dermatologic and ophthalmic inflammation.

Keywords: Cnidoscolus Quercifolius , Euphorbiaceae , Inflammation , Medicinal Plants, Phytochemical Screening .

Introduction

Herbal medicine is the use of medicinal plants for prevention and treatment of diseases; it ranges from traditional and popular medicines of every country to the use of standardized and titrated herbal extracts. Generally cultural rootedness enduring and widespread use in a Traditional Medical System may indicate safety, but not efficacy of treatments, especially in herbal medicine where tradition is almost completely based on remedies containing active principles at very low and ultra low concentrations, or relying on magical-energetic principles.

In the age of globalization and of the so-called 'plate world', assessing the 'transferability' of treatments between different cultures is not a relevant goal for clinical research, while are the assessment of efficacy and safety that should be based on the regular patterns of mainstream clinical medicine. The other black box of herbal- based treatments is the lack of definite and complete information about the composition of extracts.

Herbal derived remedies need a powerful and deep assessment of their pharmacological qualities and safety that actually can be realized by new biologic technologies like pharmacogenomic, metabolomic and microarray methodology . Because of the large and growing use of natural derived substances in all over the world, it is not wise to rely also on the tradition or supposed millenarian beliefs; explanatory and pragmatic studies are useful and should be considered complementaryin the acquisition of reliable data both for health caregiver and patients**.**

Materials and Methods[6-13]

The authentication of plant was done by the botanist. A herbarium of plants were submitted in Dept. of Botany Janata PG College, APS University and authenticated by Dr. S.N. Dwevedi Professor and Head Department of Botany Janata PG College, APS University, Rewa, M.P.

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Extraction of plant material: Cnidoscolus Quercifolias leaves collected, washed with distilled water. 250 gm dried Cnidoscolus Quercifolias leaves were ground to powder form and stored in a tightly sealed container. The Soxhlet apparatus and method was used for extraction. The Soxhlet thimble was filled with the powdered leaves and inserted into the Soxhlet main chamber and closed. One liter of 70% ethanol was filled into the Soxhlet main chamber and attached to the Soxhlet apparatus, which was heated until the solvent vapour filled the main chamber. The solvent vapour then condensed and dripped back down into the chamber containing the Cnidoscolus Quercifolias leaf extract. The Cnidoscolus Quercifolias leaf extract using 70% ethanol was then evaporated with a rotary evaporator at 30 o C and concentrated to 50 mL before being freeze-dried. The powdered form of freeze-dried extract was kept in the freezer tomaintain the compound.[7-9]

Phytochemical investigation:

Selection and collection plant: Plant and plant parts was selected on the basis of Ethano-botanical survey.

Tests for Carbohydrates:

Molish Test:

2 ml of extract was treated with 2 drops of alcoholic □-naphthol solution in a test tube and then 1 ml of concentrated sulphuric acid was added carefully along the sides of the test tube. Formation of violet ring at the junction indicates the presence of carbohydrates.

Benedict's Test:

Equal volume of Benedict's reagent and extract were mixed in a test tube and heated in the water bath for 5-10 minutes. Solution appears green, yellow or red depending on the amount of reducing sugar present in the test solution which indicated the presence of reducing sugar.

Tests for Protein and Amino acids:

Borntrager's Test:

To 3 ml of test solution, dilute sulphuric acid was added, boiled for 5 minutes and filtered. To the cold filtrate, equal volume of benzene or chloroform was added and shake it welled. The organic solvent layer was separated and ammonia was added to it. Formation of pink to red color in ammonical layer indicates presence of anthraquinone glycosides.

Tests for Alkaloids:

To the extract, dilute hydrochloric acid was added, shake it well and filtered.

With the filtrate, the following tests were performed.

Mayer's Test:

To 2-3 ml of filtrate, few drops of Mayer's reagent were added along sides of tube. Formation of white or creamy precipitate indicates the presence of alkaloids.

Hager's Test:

To 1-2 ml of filtrate, few drops of Hager's reagent were added in a test tube. Formation of yellow color precipitate indicates the presence of alkaloids.

Wagner's Test:

To 1-2 ml of filtrate, few drops of Wagner's reagent were added in a test tube. Formation of reddish brown precipitate indicates the presence of alkaloids.

Tests for Saponins:

Froth Test:
The extract was diluted with distilled water and shaken in graduated cylinder for 15 minutes. The formation of layer of foam indicates the presence of saponins.
Tests for Flavonoids:
Lead Acetate Test:
The extract was treated with few drops of lead acetate solution. Formation of yellow precipitate may indicate the presence of flavonoids.
Alkaline Reagent Test:
The extract was treated with few drops of sodium hydroxide separately in a test tube. Formation of intense yellow color, which becomes color less on addition of few drops of dilute acid, indicate presence of flavonoids.
Tests for Triterpenoids and Steroids:
Salkowski's Test:
The extract was treated with chloroform and filtered. The filtrate was added with few drops of concentrated sulphuric acid, shaken and allowed to stand. If the lower layers turns red, sterol are present. Presence of golden yellow layer at bottom indicates the presence of triterpenes.
Tests for Tannin and Phenolic compounds:
Ferric Chloride Test:
Some amount of extract was dissolved in distilled water. To this solution 2 ml of 5% ferric chloride solution was added. Formation of blue, green or violet color indicates presence of phenolic compounds.
Dilute Iodine Solution test
To 2-3 ml of extract, few drops of dilute iodine solution were added. Formation of transient red color indicates presence of phenolic compounds.[9-13]

Result and Discussion

Plants have been used during the age for cure and treatment of diseases since the start of mankind. Phytotherapy is the use of plant, plant extract or pure chemicals isolated from natural products to treat diseases. Plants have been used to treat diseases such as diabetes, jaundices, cardiovascular disease, heavy metal poisoning , congestion of abdominal and pelvic cavities and scarlet fever etc. it is evident that the plant has great potentials in treating a number of aliments where the free radicals have been reported to be the major factors contributing to the disorders. Firstly, Organoleptic Characterization of plant extract was performed. Organoleptic evaluations are subjective, sensory judgements. They can involve eyeing, feeling and taste of the extract to the judge its appearance, coour, integrity, texture and flavours. The organoleptic characters of alcoholic extract of *Cnidoscolus Quercifolias* leaf extract were found to be dark green in colour, semi solid, and taste is acrid.
Solubility testing of alcoholic extract of *Cnidoscolus Quercifolias* leaf is done mainly to study the ability of the dissolve in different solvent for the preparation of aqueous extract for dosing. The alcoholic extract was observed to be dissolved in water and DMSO.
In the present study, the preliminary phytochemicals test was done on the alcoholic extract of *Cnidoscolus Quercifolias* leaf and it is found to be rich in Carbohydrates, Proteins, Saponin, Flavonoids and Phenolic compound.
Physical Examination:
Table 1: Physical Evalution of Cnidoscolus Quercifolias leaf extract

S.No.	Organoleptic Characteristics	Result
1.	Colour	Dark Green
2.	Taste	Acrid
3.	Odour	Pungent
4.	Appearance	Semi-solid
5.	Consistency	Sticky

Solubility Tests:-

Table 2: Solubility of Cnidoscolus Quercifolias leaves extract in different solvents.

S.No.	Solvent	Observation
1.	DMSO	Soluble
2.	Distilled water	Soluble
3.	Chloroform	Insoluble
4.	Methanol	Soluble

Table 3 Phytochemical investigation:

Test for carbohydrates	
Test	Methanolic extract
Molish	- Ve
Fehling's	- Ve
Benedict's	- Ve
Test for protein and amino acid	
Biuret	- Ve
Ninhydrin	- Ve
Test for glycosides	
Borntrager's	- Ve

Keller-killani	**- Ve**
Test for alkaloids	
Mayer's	**- Ve**
Hager's	**- Ve**
Wagner's	**- Ve**
Test for saponins	
Froth Test	**- Ve**
Test for flavonoids	
Lead acetate	**+ Ve**
Alkaline reagent	**+ Ve**
Test for triterpenoids and steroids	
Salkowski's	**- Ve**
Libermann-burchard's	**- Ve**
Test for Tanin and phenolic compounds	
Ferric chloride	**- Ve**
Lead acetate	**- Ve**
Gelatin	**-Ve**

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