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Research Article

# PRELIMINARY PHYTOCHEMICAL SCREENING OF SEEDS OF *PSORALEA CORYLIFOLIA*

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**ABSTRACT**
*Psoralea corylifolia* known as "Babchi" is a medicinal plant for the treatment of skin diseases. In India, indigenous herbal remedies such as Ayurveda and other Indian traditional medicines have since ancient times used plants in treatment of various disorders. In our present investigation preliminary phytochemical analysis of *Psoralea corylifolia* has been evaluated for the presence of bioactive constituents using various polarity solvents including hexane, butanol, ethanol and water. The phytochemical screening of the plant extracts revealed the presence of maximum compounds including carbohydrates, terpenoids, alkaloids, phenols, tannins, amino acid and proteins, cardiac glycosides. The results suggest that the ethanolic extract of *Psoralea corylifolia* has promising therapeutic potential and can be used as a base for the development of novel potent drugs in phytomedicine.
**KEYWORDS:** *Psoralea corylifolia*, phytochemical analysis, bioactive, phytomedicine

## INTRODUCTION

Indigenous herbs are used as remedies against various diseases in the traditional system of medicine or in ethnomedical practices. The indigenous system of medicine namely ayurveda, siddha and unani have been in existence for several centuries. The use of different parts of several medicinal plants to cure specific diseases has been in vogue from ancient times. Medicinal plants are the local heritage with global importance and world is endowed with a rich wealth of medicinal plants[1]. Medicinal plants are used by 80% of the world population as the only available medicines especially in developing countries[2]. Many potent drugs have been purified from medicinal plants having anti-rheumatic, antithrombotic, antimalarial, anticancer, antidiabetic and antimicrobial properties[3]. The most important bioactive constituents of plants are alkaloids, tannins, flavonoids and phenolic compounds[4]. In recent years, secondary plant metabolites (Phytochemicals) previously with unknown pharmacological activities have been extensively investigated as source of medical agents[5]. Traditionally, screening methods have been used to study the pharmacological effects of phytochemical compounds. Biologically active compounds from natural sources have always been of great interest to scientists working on infectious diseases.

*Psoralea corylifolia* Linn (Family: Leguminoseae) Commonly known as babchi, this is an erect annual herb bearing yellow or bluish purple flowers and found throughout Indian plains, Pakistan, Srilanka, Burma and China[6]. It is widely used in Chinese medicine to treat a variety of diseases and possesses antitumor, antibacterial, cytotoxic and antihelmenthic properties[7]. The plant is of immense biological importance, and it has been widely exploited since ages for its magical effect against several skin diseases, such as psoriasis, leukoderma, and leprosy[8]. It has also been used in Ayurvedic medicinal system as a cardiac tonic, vasodilator and pigmentor. Seeds of *P. corylifolia* have been widely recommended for curing asthma, leprosy, psoriasis, leukoderma and inflammatory skin diseases[9].

The medicinal values of plants lie in their component phytochemicals such as alkaloids, flavonoids, tannins and other phenolic compounds, which produce a definite physiological effect on the human body. Systematic searches on bioactive compounds of useful medicinal plants are now considered to be a rational approach in nutraceutical and drug research. Therefore, the present work has been designed to evaluate the phytochemical constituents of P. *corylifolia*.

## MATERIALS AND METHODS

### Collection of Plant material

Seeds of *P. corylifolia* were collected from seed market, Coimbatore. The seeds were washed thoroughly 2-3 times with running tap water and once with sterile distilled water, air dried at room temperature on a sterile blotter. After complete drying, seeds were powdered well using a mixer. Then the powdered material was weighed and kept in air tight container and stored in a refrigerator for future use.

### Extraction of plant material

About 50 g of the powdered plant material was taken and subjected to successive solvent extraction. The extraction was carried out for 16 h with the following solvents in the increasing order of polarity. Each time before extracting with the next solvent, the residue was dried thoroughly to remove the solvent used. After complete drying, the above mentioned residue was extracted with successive solvents, 250 ml hexane, 250 ml butanol, 250 ml ethanol, 250 ml water, in the increasing order of polarity, after shaking for 16 h. The above mentioned extraction was done for phytochemical screening.

### Preliminary phytochemical screening of the plant

The condensed extracts of different solvent used for preliminary phytochemical screening was carried out using standard procedures to test the presence of bioactive compounds[10, 11]

### Test for alkaloids

A 2 ml aliquot of all the extract was treated with the Dragenderoff's reagent. An orange red precipitate produced immediately which indicated the presence of alkaloids.

### Test for sterols and steroids

The extract was dissolved in 2 ml of chloroform and an equal volume of concentrated sulphuric acid was added by the sides of the test tube. The upper layer turned red, revealing the presence of steroid compounds in the extract.

### Test for flavonoids

One milliliter of the extract was treated with magnesium turnings and one to two drops of concentrated hydrochloric acid. The formation of red or pink color showed the presence of flavonoids.

**Test for tannins and phenolic compounds**

One milliliter of the extract was treated with few milliliters of 5% neutral ferric chloride. A dark blue or bluish black product showed the presence of tannins.

**Test for amino acids and proteins**

To 1 ml of the extract, two drops of freshly prepared 0.2% ninhydrin reagent was added, and the mixture was heated. The development of a violet color indicates the presence of proteins.

**Test for carbohydrates**

The extract was treated with 5 ml of Fehling's solution (A and B) and kept in boiling water bath. The formation of yellow or red color precipitate indicates the presence of reducing sugar.

**Test for cardio glycosides**

For this test, 0.5 ml of the extract was dissolved in 2 ml of chloroform and sulphuric acid was carefully added to form a lower layer. A reddish brown color at the interface indicated the presence of steroidal ring.

**Test for saponins**

About 1 ml of the alcoholic extract was diluted separately with 20 ml of distilled water and shaken in a graduated cylinder for 15 min. A 1 cm layer of foam indicated the presence of saponins.

**Test for fixed oils and fats**

A small quantity of the extract was pressed between the two filter papers. Oil stains on the filter paper indicated the presence of saponins.

**Test for terpenoids**

To 1 ml of the extract, 2 ml of trichloroacetic acid (TCA) was added. The formation of yellow to red precipitate showed the presence of terpenoids.

**TABLE: 1 PHYTOCHEMICAL SCREENING OF SEEDS OF *PSORALEA CORYLIFOLIA* IN VARIOUS EXTRACTS**

| Extracts | AL | SA | TP | FL | ST | CG | OF | TN | AP | CH |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexane | - | - | - | - | + | + | - | - | - | - |
| Butanol | + | - | + | + | + | - | - | + | - | - |
| Ethanol | + | - | + | + | + | + | + | + | - | + |
| Water | + | - | + | + | + | - | - | + | + | + |

AL: Alkaloids, SA: Saponins, TP: Tannin and Phenolic compounds, FL: Flavonoids, ST: Steroids, CG: Cardioglycosides, OF: Oils and Fats, TN: Terpenoids, AP: Aminoacids and Proteins, CH: Carbohydrates, '+' Present, '-' Absent

## RESULTS AND DISCUSSION

The present study carried out on the plant sample revealed the presence of medicinally active constituents. Table 1 shows the result of phytochemical screening of various extracts of *P. corylifolia*. Hexane extract of *P. corylifolia* showed the presence of cardioglycosides and steroids. The test for alkaloids, terpenoids, flavonoids, oils and fats, tannins and phenolic compounds showed negative results. The ethanolic and water extracts of *P. corylifolia* showed the maximum presence of bioactive constituents including alkaloids, terpenoids, flavonoids, carbohydrates, steroids, tannins and phenolic compounds. The butanol extract of *P. corylifolia* showed the presence of alkaloids, flavonoids, steroids, terpenoids, tannins and phenolic compounds. Phenolic compounds like tannins are potent inhibitors of many hydrolytic enzymes used by plant pathogens.

## CONCLUSION

The phytochemical analysis of the extracts from the seeds of *P. corylifolia* showed the presence of various bioactive compounds such as alkaloids, flavonoids, tannins, phenolic compounds, steroids, terpenoids, carbohydrates, cardioglycosides, aminoacids and proteins. The results of the present investigation suggest that the plant extract possess bioactive compounds that can be further explored for antioxidant and antimicrobial activity. The millenarian use of medicinal plants in folk medicine suggests that they represent an economic and safe alternative to treat many infectious diseases. Medicinal plants serves as useful sources for finding potential new compounds for therapeutic use. The discovery of potent remedy from plant origin will be a great advancement in phytomedicine.

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