Research Article

PHYTOCHEMICAL SCREENING OF *BAUHINIA PURPUREA* L.: AN IMPORTANT MEDICINAL PLANT

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ABSTRACT

For thousands of years mankind is using plant sources to alleviate or cure illnesses. Plants constitute a source of novel chemical compounds which are of potential use in medicine and other applications. This study deals with the phytochemical screening of leaf extract of *Bauhinia purpurea* L. one of the wild members of the family Caesalpiniaceae. The plant is known for its anti-cold, anti-cough, anti-inflammatory and anti-diarrheal properties since ages and is being used by local tribal communities as an ethnomedicine. The preliminary phytochemical screening was performed from leaf extract for the presence of alkaloids, tannins, saponins, phlobatannins, flavonoids and terpenoids. The presence of alkaloids, tannins, saponins, phlobatannins, flavonoids and terpenoids in this plant indicates that it could be used in the treatment of burns and wounds. Finally, the high alkaloids flavonoids and terpenoids content of the plant suggest the antioxidant potential and justifies the therapeutics action which could be used in drug formulation.

Keywords: Phytochemical, ethnobotanical, *Bauhinia purpurea*.

INTRODUCTION

Medicinal plants are important in healthcare and are valuable economic resources. India is one of the world's richest countries in medicinal plants comprising about 45000 species¹. They have been playing an important role in alleviating human suffering by contributing in the formulation of herbal medicines in the primary health care systems of rural and remote hilly areas where more than 70% of population depends on folklore and traditional systems of medicine. However, there are thousands of species of medicinal plants used globally for the cure of different infections. These plants as used as antimicrobial agents and several works have been carried out by scientists to find out their scientific basis. *Bauhinia purpurea* L. belonging to the family of Caesalpiniaceae, called Camel's foot tree in English, pink bauhinia or butterfly tree.

Plant description

The height of Tree 15m; branchlets warty. Leaves oblong, 5.5-11.5 x 6-12 cm; leaflets connate about half way, with lobes sometimes overlapping, thin-coriaceous, 11-13 nerved, plaited below, base subcordate, margin entire, apex obtuse-subacute; petiole to 3 cm; stipules triangular. Inflorescence terminal or axillary, of racemes or panicles, to 15 cm; peduncle stout, to 5 cm; bract ovate, to 4 cm; pedicel to 2.5 cm; buds narrow-obovoid, apex obtuse. Flowers 6-8 cm across. Calyx-tube turbinate, 2 x 1.5 cm, apex 2-cleft. Petals 5, rose to pink, equal and similar, obovate, 3.5 x 1.5 cm, narrow at base, entire, obtuse. Stamens (3) 5; filaments to 2.5 cm; anthers oblong, to 6 mm. Ovary compressed, grooved, to 1.5cm; stipe to 1 cm; ovules α ; style terminal, to 1 cm; stigma capitate. Pod oblong, 30-40 x 1.5-2cm, compressed, narrow at base, apex horned; seeds ca, 10, ovoid, 1.5 x 1 cm, flat, obliquely oriented, beaked. Plains to 1000m. Often cultivated. Densely foliaceous tree. Flowers with a peak during September. Pods throughout the year². (Figure 1)

Figure 1: Habit with Habitat

Medicinal Properties

The plant is being used by the local people and tribals of Tamil nadu as ethno medicine in various ailments. Bark-astringent, antidiarrhoeal. Flower buds and flowers, fried in purified butter, are given to patients' suffering from dysentery. Extract of stems are used internally and externally for fractured bones. Plant is used in goitre. It exhibits antithyroid-like activity in experimental animals. The flowers contain astragalin, isoquercitrin and quercetin, also anthocyanins. Seeds contain chalcone glycosides. The present study was designed to evaluate the fundamental phytochemical constituents of this wild medicinal plant³.

MATERIALS AND METHODS

The plants used in this study were collected from their natural habitats from the Adhiyamaan college of Engineering garden Hosur, Krishnagiri district in Tamil Nadu, India. The plants were shade dried

at an ambient temperature (31°C) and the dried plants were crushed into fine powder using an electric blender.

Phytochemical analysis

Chemical tests were carried out using various explants such as acetone, ethyl alcohol, chloroform, butanol and water. To identify the presence of phytochemicals like alkaloids, tannins, saponins, phlobatannins, terpenoids, flavonoids. Using standard method of Sofowara, Trease and Evans and Harbone⁴.

Test for Alkaloids

Add 3 ml of aqueous extract and stir with 3 ml of 1% of HCl on steam bath. Mayer and Wagner's reagent was then added to the extract. Turbidity of the resulting precipitate was taken as an evidence for the presence of alkaloids.

Test for Tannins

3 ml of the aqueous extract was stirred with 3 ml of distilled water and few drops of FeCl₃ solution were added. The formation of green color precipitate indicates the presence of tannins.

Test for Saponins

3 ml of aqueous extract was shaken vigorously with an equal volume of distilled water in a test tube and the mixture was warmed. The formation of stable foam was taken as an indication of presence of Saponins.

Test for Phlobatannins

3 ml of aqueous extract was added to 2 ml of 1% HCl and the extract was boiled. Deposition of a red precipitate was taken as an evidence for the presence of phlobatannins.

Test for Flavonoids

To 3ml of aqueous extract, 1 ml of 10% lead acetate solution was added. The formation of a yellow precipitate was taken as a positive result for flavonoids.

Test for Terpenoids

3 ml of organic extract was dissolved in 2 ml of chloroform and evaporated to dryness. 2 ml of concentrated sulphuric acid was then added and heated for about 2 min. Development of greyish color indicates the presence of terpenoids.

RESULTS AND DISCUSSION

The phytochemical analysis of acetone, ethyl alcohol, chloroform, butanol and water extracts of *B. purburia* revealed the presence of phytochemicals in varying proportions (Table 1). All phytochemicals i.e. alkaloids, tannins, saponin, phlobatannins, flavonoids, and terpenoids were present in this species. Alkaloids were present in all the extracts, but tannin and terpenoids was present ethyl alcohol and chloroform extracts respectively (Table 1 and Figure 2). The terpenoids were present in chloroform extract only.

Table 1: Qualitative analysis of Phytochemicals in leaf extract of *B. Purburia*

Sl. No	Phytochemical Test	AE	EAE	CE	BE	WE
1.	Test for Alkaloids	+	+	+	+	+
2.	Test for Tannins	-	+	-	-	-
3.	Test for Saponins	-	+	+	+	-
4.	Test for Phlobatannins	+	+	-	-	+
5.	Test for Flavonoids	+	-	-	+	-
6.	Test for Terpenoids	-	-	+	-	-

Note: AE-Acetone Extract; EAE-Ethyl alcohol Extract; CE-Chloroform Extract; BE-Butanol Extract; WE-Water Extract

Figure 2: Phytochemicals analysis of different leaf extract of *B. purburia*

Phytochemical constituents such as tannins, flavonoids, alkaloids and several other aromatic compounds or secondary metabolites of plants serve as defense mechanism against predation by many microorganisms, insects and herbivores. The curative properties of medicinal plants are perhaps due to the presence of various secondary

metabolites such as alkaloids, flavonoids, glycosides, phenols, saponins, steroids, etc⁵. It may be concluded that this medicinal plant is very useful and also it may be used to cure some common ailments and various diseases.

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