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Preliminary phytochemical analysis of different plant parts of *Albizia odoratissima* (L.F.) benth

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Abstract

Various traditional system of medicine enlightens the importance of plant *Albiziaodoratissima* (L. f.) Benth (Family: Fabaceae) have a great value. Traditionally this plant used in treatment of leprosy, ulcer, skin diseases cough, bronchitis. The present study was aimed to preliminary phytochemical studies of this plant. The objective of these study was subjected to preliminary phytochemical screening was to screen aqueous, methanol and chloroform extract of dried powder of leaves, stem and seed of these plant. This study is useful to detect the different phytochemicals like alkaloid, carbohydrates, reducing sugar, phytosterols, saponins, phenolic compound, tannins, flavonoids, terpenoids, cardiac glycosides, steroids etc. The phytochemical evolution revealed the presence of carbohydrate, phytosterol, saponins, terpenoid, in plant parts like leaf, stem bark and seeds.

Keywords: *Albizia odoratissima* (L. F.) benth, phytochemicals, solvent system, plants parts

Introduction

Albizia odoratissima (L. F.) Benth. Is a large tree belonging to family mimosaceae, growing up to 20m height, distributed in India, Sri Lanka and Nepal? It is used as a top produce timber and found as a home garden tree as well as roadside tree. In Traditional Indian Medicine, the bark is used in treatment of leprosy, ulcers and cough [3]. Whole plant parts is used for anxiety and depression. The flower heads are used as oxytocic, anthelmintic, digestive sedative and diuretic and for insomnia. The stem is used for analgesic, stimulant, swelling, injuries, abscesses, diuretics, anthelmintic and diabetes [6, 4, 8]. Bark is used as insecticide by the indigenous "Garo tribe" of Meghalaya in their traditional farming [10]. Leaves boiled in butter are used as remedy for cough. Flowers or flower buds are effective in insomnia and felling of constriction in the chest [1]. Therefore, to explore the possibility of developing a system for applications of these plants in curing diseases, a systematic and extensive investigation in their medicinal properties is needed.

Phytochemicals are naturally occurring bioactive compounds present in plants for their characteristic odor, flavor, smell and texture, which can be used as remedy for many diseases, including cancer and cardiovascular diseases and to inhibit pathogenic microorganisms [9]. The most important bioactive constituents of plants are alkaloids, tannins, flavonoids, steroids, terpenoids, carbohydrates and phenolic compounds [7]. They are non-nutritive and a large group of plant derived compounds hypothesized to be responsible for much more disease protection.

Phytochemical analysis is the preliminary way to discovery of new use full drugs. Plants are the greatest reservoirs of drugs of traditional systems of medicine, phytochemical intermediates and chemical entities for synthetic drugs. The present study was aimed to phytochemical screening of different plant parts like leaves, stem bark and seeds of *Albizia odoratissima* (L.F.) Benth in different solvent system like aqueous, methanol and chloroform.

Material and methods

Plant collection and identification

I have collected the plant part like leaves, stem bark, and seeds of *Albizia odoratissima* (L. F.) Benth. The plant material was free from disease. This plant materials were identified by standard literature.

Extraction of plant material

Preparation of extract

The collected plant material were wash with water and make the concentration of 1 percent for different plant parts in different solvents like water, methanol and chloroform. The prepared

plant extract is taken for different phytochemical tests.

Preliminary phytochemical analysis

The above extracts of leaves, stem bark and seeds were subjected to qualitative phytochemical analysis in different solvents like aqueous, methanol and chloroform. Individual extract was subjected to the qualitative phytochemical screening for the presence of some chemical constituents. Phytochemical test were carried out adopting standard procedure [5, 11].

1. Test for Alkaloids

1ml of extract was treated with Mayer's reagent (Freshly Prepared). Yellow or cream Colored PPT shows presence of alkaloid.

2. Test for Carbohydrate

1 ml of extract was treated with alcoholic alpha- Naphthol solution (shake well) followed by addition of concentrated sulphuric acid. Development of violet colour at the junction of two liquid shows presence of carbohydrate.

3. Test for reducing sugar

1 ml of extract with 1 ml of Benedict's reagent was taken in test tube. Keep in boiling water bath for 5 min. Orange red PPT shows presence of reducing sugar.

4. Test for Phytosterol

1ml plant extract was treated with few drops of concentrated sulphuric acid. Golden red colour shows presence of phytosterols.

5. Test for Saponins

1 ml of extract shaken with 2 ml of distilled water. Persistent of foam produced for 10 min shows presence of saponins.

6. Test for Phenolic compound

1 ml of extract was treated with 2-3 drops of ferric chloride solution. Black color formation shows presence of phenolic compound.

7. Test for Tannins

1 ml of extract was treated with 1 ml of ferric chloride solution. Development of green colour shows presence of tannins.

8. Test for Flavonoids

1 ml of extract was treated with lead acetate solution or 5 ml of diluted ammonia was taken in test tube followed by addition of 1 ml extract resulting formation of yellow colour. Small amount of concentrated sulphuric acid is added from the side of the test tube. Yellow PPT or diss-appearance of yellow color after addition of concentrated sulphuric acid shows presence of flavonoids.

9. Test for Proteins

1 ml extract was treated with biuret reagent. Formation of pink (purplish violet) colour shows presence of proteins.

10. Test for Terpenoid

1 ml of extract was firstly treated with 2 ml of chloroform then with 3 ml of concentrated sulphuric acid to form a layer. Reddish brown coloration at interface shows presence of terpenoid.

11. Test for Cardiac glycosides

1 ml of extract was treated with glacial acetic acid containing 1 drop of ferric chloride solution. Brown PPT shows presence of cardiac glycosides.

12. Test for Steroid

1 ml extract mix with 2 ml of chloroform and with equal volume of concentrated sulphuric acid. Presence of steroid confirms when upper layer turns red and sulphuric acid layer shows yellow colour.

Result and discussion

Table 1: Phytochemical analysis of fresh leaves of *Albizia odoratissima* (L.F.) Benth.

Sr. No.	Phytochemicals	Aqueous	Methanol	Chloroform
1.	Alkaloids	+	-	-
2.	Carbohydrate	+	-	-
3.	Reducing sugar	-	-	-
4.	Phytosterol	+	-	-
5.	Saponins	+	+	+
6.	Phenolic compound	+	+	-
7.	Tannins	-	+	+
8.	Flavonoid	+	-	+
9.	Proteins	+	-	-
10.	Terpenoid	+	-	-
11.	Cardial glycosides	+	+	+
12.	Steroids	+	+	-

Table 2: Phytochemical analysis of Stem bark of *Albizia odoratissima* (L. F.) Benth.

Sr. No.	Phytochemicals	Aqueous	Methanol	Chloroform
1.	Alkaloids	+	+	+
2.	Carbohydrate	+	+	+
3.	Reducing sugar	-	-	-
4.	Phytosterol	+	+	+
5.	Saponins	+	-	+
6.	Phenolic compound	-	-	-
7.	Tannins	-	-	-
8.	Flavonoid	+	+	-
9.	Proteins	-	-	-
10.	Terpenoid	+	+	-
11.	Cardial glycosides	-	-	-
12.	Steroids	-	-	-

Table 3: Phytochemical analysis of Seeds of *Albizia odoratissima* (L. F.) Benth.

Sr. No.	Phytochemicals	Aqueous	Methanol	Chloroform
1.	Alkaloids	-	-	-
2.	Carbohydrate	+	+	+
3.	Reducing sugar	-	-	-
4.	Phytosterol	+	+	+
5.	Saponins	+	+	+
6.	Phenolic compound	-	-	-
7.	Tannins	-	-	-
8.	Flavonoid	-	-	+
9.	Proteins	+	-	-
10.	Terpenoid	+	+	+
11.	Cardial glycosides	+	+	+
12.	Steroids	+	+	+

Note: [(+)= Positive, (-)=Negative, (*) Doutful]

Phytochemical screening of plant part like leaf, stem bark, seed of *Albizia odoratissima* (L. F.) Benth in different solvents like aqueous, methanol and chloroform show

presence and absence of different phytochemicals shown in table 1, 2 and 3 respectively. All plant parts consist of phytochemicals like carbohydrates, phytosterol, saponins, terpenoids but reducing sugars and tannins are absent. In the other phytochemicals results varied between plant parts. These commonly known phyto-compounds particularly flavonoids, saponin tannin and alkaloids have been reported to create barrier against sicknesses and diseases in man. These phyto-chemicals have been linked to different pharmacological activities which include antibacterial, antioxidants and analgesic properties, which could justify their traditional therapeutic use.

The phytochemical constituent's leaf extracts of *Albizia odoratissima* (L. F.) Benth. presented in table 1 shows presence of saponin, cardiac glycosides and absence of reducing sugar in all three-solvent system.

Stem bark extract presented in table 2 shows presence of alkaloid, carbohydrate, phytosterol and absence of reducing sugar, phenolic compounds, tannins, proteins, cardiac glycosides, steroids in all three -solvent system [2].

Seed extract presented in table 3 shows presence of carbohydrate, phytosterol, terpenoid, cardiac glycosides, steroid and absence of alkaloids, reducing sugar, phenolic compound, tannins, flavonoid in all three- solvent system.

Conclusions

The phytochemicals observed in this study shows these plants have a potency for use in producing pharmaceutical bioactive compounds for therapeutic drugs. Further studies should be carried out on this plants in order to isolate, identify the bioactive compounds and determine their mechanism in action. The presence of phytochemicals make the plant useful for treating different diseases and have a potential for providing a drug for human use.

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