



PHYTOCHEMICAL SCREENING OF MEDICINAL PLANTS NAMELY *HEMIDESMUS INDICUS*, *PSORELEA CORYLIFOLIA*

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ABSTRACT

Plants have been the basis of many traditional medicines through the world for thousands of years and continue to provide new remedies to mankind. Plant are one of the richest source of bioactive compound. *Hemidesmus indicus* is a twining shrub belong to family Asclepiadaceae, its common name is *Ananta-mula*. The root of this taxon has been used in folk medicine as well as in ayurvedic and unani preparation. They are used prescribed against the disease of blood inflammation, diarrhoea, respiratory disorders, skin disease, fever, bronchitis, asthma or kidney and urinary disorder and other plant *Psorelea corylifolia* (Bakuchi) / seeds are used to evaluate antibacterial efficacy of Bakuchi belong to family Fabaceae. It is used clinical, in many exciting antibiotics. It is used in Antibacterial assay performed by gram positive & gram negative skin pathogens our findings provided evidence that crude aqueous and organic solvent extracts of these tested plant contain medicinally important bioactive compound and it justified their use in the traditional medicines for the treatment of different disease. The main aim of the proposed study is to investigate the phytochemical screening of medicinal plant.

KEYWORDS: Phytochemical screening, *Hemidesmus indicus*, *Psorelea corylifolia*, qualitative analysis etc.

INTRODUCTION

The importance of plants is well known to all. The plant kingdom is a treasure house of potential drugs and in the recent years there has been an increasing awareness about the importance of medicinal plants. Drugs from the plants are easily available, less expensive, safe, and efficient and rarely have side effects. The plants which have been selected for medicinal use over thousands of years constitute the most obvious choice of examining the current search for therapeutically effective new drugs such as anticancer drugs^[1], antimicrobial drugs^[2], antihepatotoxic compounds. According to World Health Organization (WHO), medicinal plants would be the best source to obtain variety of drugs. About 80% of individuals from developed countries use traditional medicines, which has compounds derived from medicinal plants. However, such plants should be investigated to better understand their properties, safety, and efficiency.^[3]

Medicinal plants contain some organic compounds which provide definite physiological action on the human body and these bioactive substances include tannins, alkaloids, carbohydrates, terpenoids, steroids and flavonoids.^[4,5]

They are widely used in the human therapy, veterinary, agriculture, scientific research and countless other

areas.^[6] A large number of phytochemicals belonging to several chemical classes have been shown to have inhibitory effects on all types of microorganisms in vitro.^[7]

Plant products have been part of phytomedicines since time immemorial. This can be derived from barks, leaves, flowers, roots, fruits, seeds.^[8] Knowledge of the chemical constituents of plants is desirable because such information will be value for synthesis of complex chemical substances.^[9,10,11]

In the present work, qualitative and quantitative phytochemical analysis were carried out in two plants, *Hemidesmus indicus* and *Psorelea corylifolia*.

MATERIAL AND METHODS

Collection of plant materials

Fresh parts of medicinal plants, *Hemidesmus indicus* (Root and Leaves) and *Psorelea corylifolia* (Seeds and Leaves), were collected from different regions of Akola, Maharashtra. The plant materials were shaded and dried until all the water molecules evaporated and plants became well dried for grinding. After drying, the plant materials were grind well using mechanical blender into fine powder and transferred into airtight containers with proper labeling for future use.

Preparation of plant extracts in aqueous and different organic solvent

In Distilled Water

10 gm of finely powdered plant material taken in a beaker and 100 ml of distilled water was added. The mixture was prepared with continuous stirring. Then the water extract was filtered through filter paper and the filtrate was used for the phytochemical analysis.

Solvent extraction

Crude plant extract was prepared by Soxhlet extraction method. About 10gm of powdered plant material was added in 100 ml of methanol. The process of extraction was continued for 24 hrs. Then filter the solvent and filtrate was used for the phytochemical analysis.

RESULTS AND DISCUSSION



Root and Leaves of *Hemidesmus indicus*



Seed and Leaves of *Psoralea corylifolia*.

Table 1: Phytochemical screening of *Hemidesmus indicus* and *Psoralea corylifolia*

Sr. No.	Test	Reagent	Observations
1	Alkaloids	Mayer's reagent	Cream ppt
2	Terpenoids	Chloroform + conc. H ₂ SO ₄	Reddish brown interface
3	Flavonoids	Alkaline reagent	Yellow colour to colourless
4	Saponins	Water + shake	foam formation
5	Phenolic compounds	Alcohol + Ferric chloride	Bluish green
6	Tannins	Lead acetate	White ppt
7	Proteins	Conc. HNO ₃ + 14% NaOH	Orange colour
8	Carbohydrate	Barfoed's reagent	Reddish brown ppt
9	Amino acid	Ninhydrin reagent	Violet colour
10	Reducing sugars	Benedict's solution	Red precipitate

The phytochemical characteristics of two medicinal plants tested were summarized in the table-2. The results revealed the presence of medically active compounds in the two plants studied.

Table 2: Phytochemical constituents in methanolic extracts of two medicinal Plants

Sr. No.	Plants	Protein	Carbohydrate	Phenol /Tannin	Flavonoids	Saponins	Glycosides	Steroids	Terpenoids	Alkaloids
1	<i>Hemidesmus indicus</i> (Root)	+	+	+	+	+	+	+	-	-
	<i>Hemidesmus indicus</i> (Leaves)	+	+	-	-	+	+	+	-	-
2	<i>Psoralea corylifolia</i> (Seed)	-	+	+	+	+	+	+	+	-
	<i>Psoralea corylifolia</i> (Leaves)	-	+	-	-	+	-	+	-	-

Table 3: Phytochemical constituents in aqueous extracts of two medicinal Plants

Sr. No.	Plants	Protein	Carbohydrate	Phenol /Tannin	Flavonoids	Saponins	Glycosides	Steroids	Terpenoids	Alkaloids
1	<i>Hemidesmus indicus</i> (Root)	+	+	+	+	+	+	+	-	-
	<i>Hemidesmus indicus</i> (Leaves)	+	+	-	-	+	+	-	-	-
2	<i>Psoralea corylifolia</i> (Seed)	-	+	+	+	+	+	+	+	-
	<i>Psoralea corylifolia</i> (Leaves)	-	+	-	-	+	-	-	+	-

DISCUSSION

Phytochemical analysis conducted on the plant extracts revealed the presence of constituents which are known to exhibit medicinal as well as physiological activities.^[12] Analysis of the plant extracts revealed the presence of phytochemicals such as phenols, tannins, flavonoids, saponins, glycosides, steroids, terpenoids, and alkaloids.

The phenolic compounds are one of the largest and most ubiquitous groups of plant metabolites.^[13] They possess biological properties such as antiapoptosis, antiaging, anticarcinogen, antiinflammation, antiatherosclerosis, cardiovascular protection and improvement of endothelial function, as well as inhibition of angiogenesis and cell proliferation activities.^[14]

The plant extracts were also revealed to contain saponins which are known to produce inhibitory effect on inflammation.^[15]

Alkaloids have been associated with medicinal uses for centuries and one of their common biological properties is their cytotoxicity.^[16]

The results obtained in this study thus suggest the identified phytochemical compounds may be the bioactive constituents and these plants are proving to be an increasingly valuable reservoir of bioactive compounds of substantial medicinal merit.

CONCLUSION

The results revealed the presence of medicinally important constituents in the plants studied. The extracts from these plants could be seen as a good source for useful drugs.

REFERENCES

1. Dewick, P.M.: Tumor inhibition from plants: Tease and Evans, 1996.
2. Phillipson, J.D., Wright, C.W.: Plants With Antiprotozoal Activity: Tease and Evans, Pharmacognosy, 14th edn., WB Saunders Company, London, 612, 1996.
3. Arunkumar, S., Muthuselvam: Analysis of phytochemical constituents and antimicrobial activities of Aloe vera L. against clinical pathogens. World J. Agril. Sc., 2009; 5(5): 572-576.
4. Edoga, H.O., Okwu, D.E., Mbaebie, B.O.: Phytochemicals constituents of some Nigerian medicinal plants. Afr. J. Biotechnol., 2005; 4(7): 685-688.
5. Mann, J.: Secondary Metabolism. Oxford University press, London, 154 1978.
6. Vasu, K., Goud, J.V., Suryam, A., Singara, Chary, M.A.: Biomolecular and phytochemical analyses of three aquatic angiosperms. Afr. J. Microbiol. Res., 2009; 3(8): 418-421.
7. Cowan, M.M.: Plant products as antimicrobial agents. Clin. Microbiol. Rev.; 1999: 564-582.
8. Criagg, G.M., David, J.N.: Natural product drug discovery in the next millennium. J. Pharm. Biol., 2001; 39: 8-17.
9. Mojab, F., Kamalinejad, M., Ghaderi, N., Vanidipour, H.R.: Phytochemicals screening of some species of Iranian plants. Iran. J. Pharm. Res., 2003; 3: 77-82.
10. Parekh, J., Chanda, S. Antibacterial and phytochemical studies on twelve species of Indian medicinal plants. Afr. J. Biomed. Res., 2007; 10: 175-181.

11. Parekh, J., Chanda, S.: Phytochemicals screening of some plants from western region of India. *Plant Arch.*, 2008; 8: 657- 662.
12. Sofowra, A.: *Medicinal Plants And traditional Medicine In Africa*. Spectrum Books Ltd., Ibadan, Nigeria, pp. 191-289, 1993.
13. Singh, R., Singh, S.K., Arora, S. : Evaluation of antioxidant potential of ethyl acetate extract/fractions of *Acacia auriculiformis* A. Cunn. *Fod Chem. Toxicol.*, 2007; 45: 1216-1223.
14. Han, X., Shen, T., Lou, H.: Dietary polyphenols and their biological significance. *Int. J. Mol. Sci.*, 2007: 950-988.
15. Just, M.J., Recio, M.C., Giner, R.M., Cueller, M.U., Manez, S., Billia, A.R., Rios, J.L.: Antiinflammatory activity of unusual lupine saponins from *Bupleurum frutescens*, 1998; 64: 404-407.
16. Nobori, T., Miurak, K., Wu, D.J., Takabayashik, L.A, Carson, D.A.: Deletion of cyclin-dependent kinase-4 inhibitor gene in multiple human cancers. *Nature*, 1994; 46: 753-756.