



Preliminary Phytochemical Analysis of *Merremia Dissecta* (Jacq) Hall a Member of Convolvulaceae

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Abstract

In the present work preliminary phytochemical screening of Merremia dissecta (Jacq) Hall has been done. The phytochemical screening showed the presence of alkaloids, glycosides, phytosterols, saponins, tannins and steroids. The extracts of Merremia dissecta(Jacq) Hall were done by using various solvents such as petroleum ether, chloroform, acetone, ethanol, and water. The present work has been done on the plant which is medicinally significant and its parts such as root, stem, leaves and seeds are used as crude drugs to cure different ailments by tribal people.

Keywords: *Merremia dissecta(Jacq) Hall, alkaloids, glycosides, phytosterols, saponins, tannins, steroids.*

Introduction:

The genus *Merremia dissecta(Jacq)* Hall is widely distributed in the regions of the world. This plant belongs to

Family	-	Convolvulaceae
Vernacular name	-	Nagin, Aphumari
Habitat	-	Occasional in Hedges
Flowers and Fruits	-	July – December

The species is twining herb whose stems are glabrous or hirsute. The leaves are palmate, 5-7 lobed, divided below the middle, lobes are obtusolate and globrous. Flowers are in long pedunculated and few flowered cymes. Sepals are ovate, globrous and enlarged in fruits. Corolla is white or pink with throat and globrous.

A teaspoon of infusion of leaves in one cup of water is taken as sedative and in urinary tract infections. Application of leaf juice externally is an effective remedy for herpes. Leaf juice is also applied on scabies and skin diseases. Boiled tubers are eaten whereas fresh are poisonous.

Dalziel recorded that a cold infusion was remedy for giddiness and is given as a treatment for chest complaints in children². Roig reported that infusion crushed leaves was for chest problems, applied against inflammation and work as emollients and sedatives at the same time³. Morton a hot infusion was given to relieve urinary infections⁴. Mansur found that *M. dissecta* was employed to treat snakebite and

intoxication in Africa⁵. Hawthorne *et. al.* found that the plant was used to treat sprains⁶. D. Fillips *et. al* wrote that a decoction of the plant was considered an effective external remedy for scabies and itches.⁷

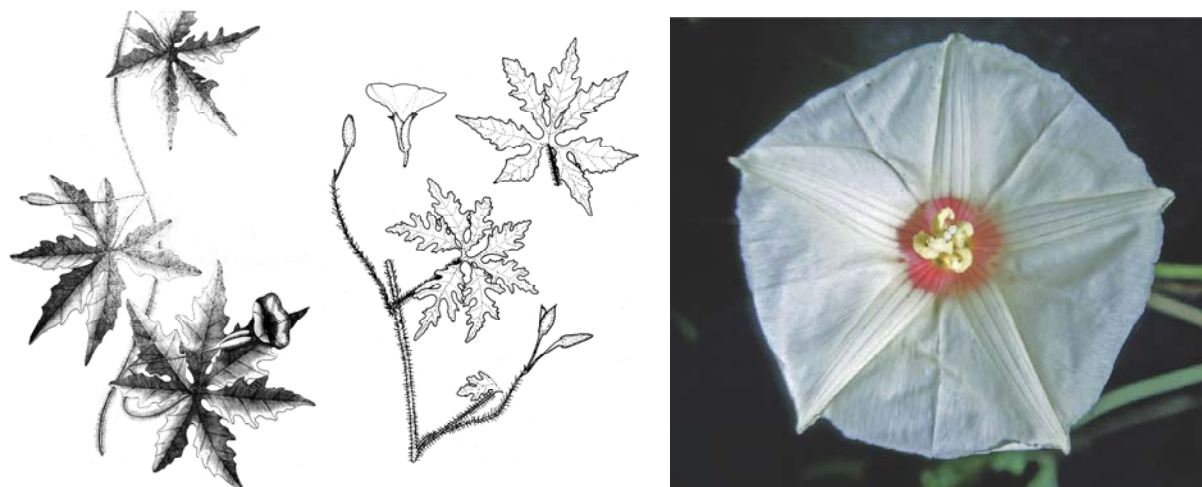


Fig. 1. *Merremia dissecta* Left, original drawing by Jacquin (1767). Right, by author (Austin 1979)¹

Ved *et. al* noted that the plants were used in folk medicine in three agro climatic regions (Andhra, Telangana, Rayalseema) of Andhrapradesh, India.⁸ *M. dissecta* is not however, employed in Ayurveda or Unnani systems, indicating a recent **Introduction** to medicine as would be expected for a comparatively new plant.

Experimental

Material and Methods:

Plants are the chief source of ethno medicine which are widely practised in remote areas. The forest dwellers have been using these plants from many decades. The local persons are the main source of information. During the investigation the ethno medicinal significance, plants were then subjected to phytochemical screening by adopting the established methods suggested by Harborn⁹, Koehm F. E. and Carter G. T.¹⁰.

Collection of Material:

The plant material for present investigation was collected from Buldana region. The information regarding its use as crude formulation for treatment was confirmed through the local practitioners. The plants were brought to the laboratory and processed for herbarium specimens. Subsequent visits were planned to photograph the plant in proper blooming period and also to confirm the folk medicinal uses. After the completion of description, identification and noting of ethno botanical significance the plants were scrutinised for phytochemical constituents through.¹¹⁻¹⁶



Treatment of Plant Materials:

The plant materials were treated and analysed at the laboratory of P.G. Department of Chemistry, Jijamata Mahavidyalaya, Buldana (MS) - India. The plants were dried on the laboratory bench for 10 days. The dry sample was milled and ground into powder. The air dried powder was extracted in Soxhlet assembly successively first with petroleum ether. The extract obtained in the solvent was concentrated by distilling of solvent and then evaporated to dryness on water bath at 50⁰C. Before extracting with other solvent the residue powder was dried in hot air oven below 50⁰C.

Dried residue was extracted successively with benzene, chloroform, acetone, ethanol and water. The extract obtained in each solvent was concentrated and solidified. Solvent free extract obtained as above was then subjected to qualitative tests for identification of various plant constituents of each sample.

Phytochemical Tests:

Following phytochemical tests were performed to find out the chemical constituents in the plant. ¹⁷⁻²²

Detection of Alkaloids:

Small portions of solvent free alcoholic and water extract was transferred in three test tubes and was stirred with few drops of dilute HCl and filtered. The filtrate was tested carefully with alkaloid reagents such as Mayer's reagent (cream ppt.), Dragandroff's reagent (Orange brown ppt.), Hager's reagent (yellow ppt) and Wagner's reagent (reddish brown ppt.)

Detection of Glycosides:

A small quantity of the extract was hydrolysed with dilute HCl for a period of about an hour on water bath at 50⁰C. the hydrolysate was further subjected to Liberman Burchard's test to detect presence of glycosides.

Detection of Phytosterols:

The petroleum ether, acetone and alcoholic extracts were treated separately with solution of potassium hydroxide (1%) till complete saponification takes place. Take 5 ml of treated extract, 5 ml of distilled water and 5 ml ether. Shake well and allow the ethereal extract to evaporate to half quantity by volume and then tested with Liberman Burchard's reagent. Brown colored ppt. indicated the presence by phytosterols.

Detection of Saponins:

To 1 gm alcoholic and aqueous extract 1 ml of distilled water was added with constant shaking till it make a volume of 20 ml was reached and further shaken thoroughly in a graduated cylinder for 15 minutes. Appearance of 1 cm layer of foam indicated the presence of saponin.

Detection of Tannins:

A small quantity of alcoholic and aq. Extract taken separately in water and dil. Ferric Chloride solution (5%) was added to it. The appearance of black or green colour indicated presence of tannins.



Detection of Steroids:

Take 20 mg of plant material add 10 ml chloroform. Shake well and filter it. Now take 2 ml filtrate and 2 ml of acetic anhydride in a test tube. Now add small quantity of conc. H₂SO₄ sideways the test tube. Blue-green ring indicates the presence of steroids.

Results and Discussion:

The phytochemical screening of the plant studied showed the presence of alkaloids, glycosides, saponin, tannin, phytosterols and steroids. The phytochemical constituents of *Merremia dissecta* (Jacq.) Hall are tabulated in the Table 1.

Table 1: Phytochemical constituents of *Merremia dissecta* (Jacq.) Leaf
(Low +, Medium ++, High +++, Absent -)

Test	Reagent	Extracting Solvent					
		Petroleum Ether	Benzene	Chloroform	Acetone	Ethanol	Water
Alkaloid	Mayer's Reagent	-	-	-	-	-	++
	Dragendorff's Reagent	-	-	+	-	-	++
	Wagner's Reagent	-	-	-	-	-	++
	Hager Reagent	-	-	+	-	-	++
Glycosides	Lieberman	-	-	-	-	-	+++
Saponin	-	+	-	-	-	-	+
Tannin	-	-	-	-	+	-	++
Phytosterols	Lib. Bur. Reagent	-	-	-	+	-	+
Steroids	Lib. Bur. Reagent	-	++	+	-	-	-

Alkaloids: Alkaloids with medium concentration are present in ethanol extract and it has low presence in water extract.

Glycosides: High concentration of glycosides is present in ethanol extract and medium concentration in water extract.

Saponins: High concentration of saponin is absent in all extracts. But found with medium conc. In water extract and with low conc. in petroleum ether and acetone extract.

Tannins: Tannins in high, medium and low conc. are found in water, ethanol and acetone respectively.



Phytosterols: Medium conc. of phytosterols was found in water extract and low conc. in acetone and ethanol extract.

Steroids: Benzene extract have medium conc. of steroids while chloroform and water extracts have low conc. of steroids.

Conclusion:

Phytochemical Screening of *Merremia dissecta* shows the presence of alkaloids, glycosides, tannins, saponins, phytosterols which is important in condiments, medicines and as ornamental point of view. The plant has various medicinal applications such as sedative, to relieve urinary tract infections, treatment of chest complaints, to treat snake bite and intoxication. It is used in flavouring in cakes, sweet breads and candy.

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