

REVIEW ARTICLE

Mimosa hamata Willd. : A Review on Ethnobotanical, Phytochemical and Pharmacological Profile

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ABSTRACT

Mimosa hamata willd. is a flowering shrub of Mimosaceae family which is used in various traditional medicines to cure various diseases. *Mimosa hamata* willd. and *Mimosa pudica* are also known as Touch-me-not plant. This weed have been known to posses anti asthmatic, wound-healing, analgesic, anti-inflammatory, contraceptive, anti-microbial, anti-viral, anti-fungal, antioxidant, anti-diarrheal blood-purifier and contraceptive properties in ancient literatures. A wide range of chemical compounds including 4-ethyl-gallic acid, triterpinic saponin A, B, ethylgallate, mimonoside A, B, C, etc have been isolated from this plant. Present review summarizes the information concerning botany, ethnopharmacology, phytochemistry, biological activity of *Mimosa hamata* willd.

Keywords: *Mimosa hamata* willd, Ethnopharmacology, Phytochemistry, Pharmacological activities

INTRODUCTION

Mimosa hamata willd. (Fig.1)(Family mimosaceae) (Genus Mimosa) commonly known as Alai is a flowering shrub of pea family and is native to arid regions of Indian subcontinent.



Fig 1: A picture of *Mimosa hamata* willd.

Taxonomical classification

Table 1: Taxonomical classification of *Mimosa hamata* willd

Kingdom:	<u>Plantae</u>
Order:	<u>Fabales</u>
Family:	<u>Fabaceae</u>
Genus:	<u><i>Mimosa</i></u>
Species:	<u><i>M. hamata</i></u>

Vernacular names

Common Names - Hooked Mimosa

- Hindi - Mundi, Bander-ki-Rakhi
- Marathi- Gulabi babul
- Telugu- Undrakampa

Botanical name: *Mimosa hamata*

Family: *Mimosaceae* (Touch-me-not)

Synonyms: *Mimosa armata*

Plant description

The plant is branched and is thicket forming, height is around 1.5 meter.

- **Roots** are brown in colour.
- **Stem** is cylindrical in shape with brown branches, the branches posses pinkish stiff spines which are generally straight or curved near apex, young branches with longitudinal ribs and downy with dense growth of small hairs are present.
- **Leaves** are alternate, stipulate, compound, bipinnate, 1.5 to 2.5 cm with rachis densely covered with hairs with 2-4 small curved spines on its abaxial surface.
- **Leaflets** are present 5 to 9 pairs, ovate, oblong, tip acute or mucronate, glabrous on the adaxial surface but densely pubescent beneath, rounded but oblique at base.

- **Inflorescence:** globose head born in the axil of leaves, mostly crowded near the distal ends of young branches.
- **Flowers** are sessile pinkish, tetramerous, actinomorphic.
- **Calyx** are 2 mm long, divided nearly half way down.
- **Corolla** are lobed, ovate-oblong and acute.
- **Stamens** are pink, anther-lobed, creamy yellow, bithecous, basifixed.
- **Gynoecium:** monocarpellary, unilocular, marginal placentation, superior, present on a stalk, elongated, curved and pubescent.
- **Stigmas** are inconspicuous.
- **Fruits** are legume, falcate or spirally coiled, one seeded.
- **Seeds** are oval, green when young turning to chestnut brown on maturation.
- **Flowering:** July-October;
- **Fruiting:** August-November.

Phytoconstituents

All the plant parts (stem, leaves, flowers and roots) of *Mimosa hamata* were investigated for the chemical constituents. Therapeutically important compounds isolated from *M. hamata* include 4-ethylgallic acid from fresh flowers.^[2] triterpene saponin B (3-O-Larabinosyl-D-glucosyl morolic acid), mimonoside A, B, C and saponin A (3-O-D-glucosyl-L-rhamnosyl morolic acid) from the roots^{[3], [4], [7]}, ethylgallate and gallic acid from leaves^[3]

Pharmacological activity

Antimicrobial activity

M. hamata willd. posses antimicrobial activity, crude ethanolic extract of aerial part of *Mimosa hamata* and deproteinized leaf extract showed their inhibitory effect against microorganisms such as bacteria and fungi.^[5]

Antiviral activity

Ethanolic extract of aerial part of *Mimosa hamata* posses antiviral activities against *Herpes simplex*, *Poliomylietes* and *Stomatitis*. Petroleum ether and chloroform extracts also exhibited potential effect against *V. Stomatitis* and *Herpes simplex*. Studies revealed that the bio efficacy of the extracts of whole plant were more effective than the fractions obtained from callus tissues. Methanolic extract of roots were also reported for their antiviral activities against *Measles*, *Semliki forest*, *Herpes simplex* and *Vesicular stomatitis*.^{[3], [5], [6]}

Antioxidant activity

Methanolic extracts of this plant was studied for higher antioxidant activity and result was positive with 6.5 µg ml⁻¹ RC value and Comparison to the dichloromethane extracts also revealed that extract of leaves, stem, root and seeds of *M. hamata* have antioxidant potential.^[7, 8, 9]

Aphrodisiac activity

Mimosa hamata is also used as herbal aphrodisiac for providing ameliorating effect on sexual dysfunction but it has not been clinically evaluated for its aphrodisiac activities. Many herbal aphrodisiac plants have large gap between traditional knowledge and pharmacological evidence.

Tradition Claims

The plant is widely used as an anti asthmatic; wound healing, analgesic, anti-inflammatory, contraceptive, anti-microbial, anti-viral, anti fungal, antioxidant, blood-purifier, anti-diarrheal and contraceptive agent. Kanjar tribe in Rajasthan use this plant for treatment of bronchitis and diarrhea in children. In Maharashtra its leaves are used for offering prayers to god for the good health of new born. The plant is also used as ornament among various tribes in Maharashtra.

DISCUSSION

Mimosa hamata is found in arid regions of india and is easily seen in regions like thar desert. This plant is used as fodder for goats and camels. The plant is widely use as a traditional medicine in various tribes from north to south in India. The plant has its traditional use as anti-asthmatic, wound-healing, analgesic, anti-inflammatory, contraceptive, anti-microbial, anti-viral, anti fungal, antioxidant, anti-diarrheal, blood-purifier and contraceptive agent and is used by different tribes and societies in India but very little scientific research has been done on this plant till now. Therefore there is need of scientific research on *M. hamata* to evaluate traditional medicinal use of this plant.

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