

MIMOSA PUDICA (LAJJALU) AN EFFECTIVE MEDICINAL PLANT

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ABSTRACT

Medicinal plants have always played a great role as sources for drug lead compound. Medicinal plants have been discovered and used in traditional medicine practices since prehistoric times. One such valuable plant is *Mimosa pudica* (Lajjalu). *Mimosa* is a Greek word meaning "Mimic" and *pudica* is a Latin word meaning "Shy". It possesses antibacterial, antidepressant, aphrodisiac and various other pharmacological properties. Traditionally it is used in treatment of various urogenital infections, diarrhea, dysentery, and prolapse. *Lajjalu* is well described in more recent literature dating from 400-500 years ago together with its use. Due to its *Tikta*, *Kashaya Rasa*, *Sheeta Virya*, *Katu Vipaka* and *Kapha Shamaka* properties it acts as great *Stambhaka* and is very useful in treating conditions like pelvic organ prolapse, menorrhagia etc.

KEYWORDS: Lajjalu, Bleeding disorder, Traditional, *Mimosa pudica*.

INTRODUCTION

Mimosa pudica, the species *pudica*, is a Latin term for "bashful" or "shrinking" due to its shrinking reaction to contact. *Mimosa pudica*, also known as humble plant, Sensitive plant, Touch me not or shame plant^[1] is an annual or biannual sub-woody plant native to South America. It was introduced as an ornamental species. It's a long growing branched, prickly perennial shrub and grows 15-100 cm tall. Flowers are bright purplish-pink. It is commonly found in moist and ungrazed places, fallow lands and water courses found in plains from coast to 1300 meters. The leaves close on stimulation.

The compound leaves fold inward and droop when touched or shaken, defending themselves from harm, and re-open a few minutes later. These type of movements have been termed seismonastic movements. In Ayurveda it has been described as "*Sparshaat Sankochtaam Yati Punascha Prasruta Bhavet*" - A plant which when touched folds itself and after a while spreads its leaves

again.^[2] The *Panchanga* of the plant is used as medicine in traditional health care system of India.

AIM AND OBJECTIVES

- To study the morphology and Pharmacological actions of *Mimosa pudica* (Lajjalu).
- To understand the traditional uses of *Mimosa pudica*.

MATERIALS AND METHODS

Materials

Materials related to *Mimosa pudica* (Lajjalu) is collected from various classical literatures, textbooks and various scientific published journal/Article.

Methods

Assessing the brief overview of *Mimosa pudica* (Lajjalu), its chemical constituents and pharmacological and traditional uses tabulated in the results from table no.1 to 9.

RESULTS

Table no. 1: Regional names.^[3]

Sanskrit	Samanga, Varakranta, Namaskari
English	Touch me not, Sensitive plant, humble plant
Urdu	Chhuimui

Hindi	<i>Lajjavanti, lajvanti, chhuimui</i>
Gujrati	<i>RisamaniLajvanti, Lajamani</i>
Telugu	<i>Mudugudamara</i>
Oriya	<i>Lajakuri</i>
Malayalam	<i>Tottavati, Tattalvati, Tintarmani</i>

Table no. 2: General morphology of plant.^[4]

Root	Cylindrical with secondary and tertiary branches approx. 2cm thick, grayish brown to brown, woody.
Stem	Cylindrical, prickly, externally light brown, grey on internal side.
Leaf	Compound, 10 -20 pairs of leaflets, sessile, obliquely narrow or linear, yellowish green in color
Flower	Pink, calyx very small corolla pink, stamens 4, ovary sessile, numerous ovules.
Lamina	Shows epidermis on both surface. few veins present in spongy parenchyma
Seed	Shows singer layered radially elongated cells followed by 5-6 layers angular cells filled with dark brown contents.
Powder	Reddish brown, shows reticulate pitted vessels, yellow/brown parenchymatous cell, shaggy hair, single and compound starch grains.
Fruit	Simple, dry, 1-1.6 cm long, 0.4 -0.5 cm broad with segments and sutures, 2-5 seeds

**Table no. 3: Scientific class.**

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae
Sub family	Mimosoideae
Genus	Mimosa
Species	Pudica

Table no. 4: Classical categorization.

<i>Charaka Samhita</i>	<i>Sandhaniya, Purisha Sangrahaniya</i> ^[5]
<i>Sushrut Samhita</i>	<i>Priyangavadi Gana, Ambashthadi Gana</i>
<i>Vagbhatta</i>	<i>Priyangavadi Gana</i> ^[6]
<i>Bhava Prakasha</i>	<i>Guduchyadi Varga</i>
<i>Raj Nighantu</i>	<i>Parpatadi Varga</i> ^[7]
<i>Kaiydeva Nighantu</i>	<i>Aushadhi Varga</i> ^[8]
<i>Nighantu Adarsha</i>	<i>Babooladi Varga</i>

Table no. 5: Mechanism of leaf movement.^[9]

Tropism	Movement towards the stimulus is positive tropism, and away from astimulus is negative tropism.
Nastic movements	Plants response to stimuli in a non - directional way.
Thigmonastic movement	Rapid Folding up of the leaflets due to touch stimulation

Table no. 6: Chemical constituents.

Seed	D -xylose, D glucornic acid, phenolic ketone
Stem	Aminoprionic acid, Mimosine
Leaves	b-sitosterol, alkaloids. nor- epinephrine, flavonoids
Root	Tannins, aminoacids crocetin, linolenic acid
Aerial part	C-glycosyl flavonoids, orientin, iso- orientin

Table no. 7: Ras panchak.

Rasa	Kashaya, tikta
Guna	Laghu, ruksha
Virya	Sheeta
Vipaka	Katu

Table no. 8: Ayurvedic refrence of Lajjalu.

Kaiydeva nighantu	नमस्करी रक्तपादा समंगा अजंलिकारिका । शमीपत्रा रक्तमुला रूहा खदीरकरुणा ॥ लज्जालुः स्यात् स्पृहा स्पृक्का का गंधकरी प्रारोचनी । नमस्करी हिमा तिक्ता कषाया कफपित्तहा । योनिरोगमतीसारं रक्तपित्तं च नाशयेत्॥ ^[10]
Dhanwantarinighantu	रक्तपादी शमीपत्रा समंगा अजंलिकारिका । नमस्करी गंधकरी स्पर्शसंकोचपर्णिका ॥ रक्तपादी कटुः शीता पित्ततीसारनाशिनी । शोफदाहश्रम श्वासव्रणकुष्ठा कफासनुत् ॥
Bhavprakasha	लज्जालूहि शमीपत्रा समङ्गा जलकारीका । रक्तपादी नमस्करी नाम्ना खदिरकेत्यपि । लज्जालुः शीतला तिक्ता कषाया कफपित्तजित् रक्तपित्तमतीसारं योनिरोगान् विनाशयेत् ॥ ^[11]
Raj nighantu	रक्तपादी कटुः शीता पित्ततीसारनाशिनी । शोफदाहश्रम श्वासव्रणकुष्ठा कफासनुत् ॥

Table no. 9: Ayurvedic formulations.

1	Kutaja avleha
2	Samangadi churna
3	Pushyanug churna
4	Lakshadi churna
5	Brihat gangadhar churna

Pharmacological activity

- 1. Anti-diabetic activity:** The fasting blood glucose levels of the experimental rats showed that *M. pudica* tended to have hypoglycemic qualities.^[12]
- 2. Anti-inflammatory action:** Male albino rats were used to examine *M. pudica*'s anti- inflammatory action.
- 3. Antiulcer activity:** In order to study the antiulcer activity, aspirin and alcohol were administered to albino rats. According to the study's parameters, *M. pudica* possesses anti-ulcerqualities.
- 4. Antidepressant action:** Dried leaves of *M. pudica* are used to make aqueous extracts, which are then used to treat depression in Mexico.
- 5. Aphrodisiac activity:** Without causing any negative side effects, an ethanolic extract of *M. pudica* Linn. (*Mimosae*) roots significantly and sustainably increased the aphrodisiac activity of normal male mice.

- 6. Cervico vaginal prolapse:** According to a study carried by department of veterinary gynecology and obstetrics, Jabalpur *Mimosa pudica* 100 g orally along with inj.enrofloxacin 5 mg/kg b.wt(I/M) was found effective therapy to treat the cervico-vaginal prolapsed animals.^[13]
- 7. Wound healing activity:** Different studies have also shown that both methanolic and aqueousextracts of *Mimosa pudica* in simple ointment base at a different concentration of 0.5%(w/w), 1%(w/w) and 2%(w/w) possess wound healing activity.
- 8. Anti-microbial activity:** *Mimosa pudica* whole plant extract possesses good antimicrobial activity between the range of 7–18 mm against the pathogens used for screening.

Traditional uses of *Mimosa pudica*

- Mimosa pudica* root is used to cure leprosy, jaundice, piles, uterine disorders, inflammations, burning sensation, and blood related diseases and bilious fevers inAyurvedic and Unani medicine.^[14]
- Decoction of root is used with water to gargle to

reduce toothache.^[15]

3. *Acharya Charak* has mentioned *Lajjalu* in *Sandhaniya gan* due to its property of arresting the bleeding and faster wound healing activity.
4. *Mimosa pudica* improves blood circulation and promotes healthy cell growth.
All the five parts of the plant leaves, flowers,
5. In the conventional medical system, The leaves, flowers, stems, roots, and fruits of the plant are all five parts that are utilised as medicinal. Also used in many herbal preparations of gynecological disorders.
6. Aphrodisiac: The ethanolic extract of roots of *M. pudica*. Produces a significant.^[16] Without any negative consequences, a boost in the aphrodisiac activity of normal male mice.
7. Cough and asthma: It is also used to treat whooping cough, asthma, chronic respiratory disorders. Juice of this plant 15 ml twice a day.^[17]
8. Insect bite: Grind the leaves and stem of this plant on affected area twice a day.^[18]

DISCUSSION

Mimosa comes from the Greek word *mimikos*, which means to mimic. It is a long growing, branched, prickly, perennial shrub. *Mimosa pudica* is also called as shy plant, humble pant, Touch me not and by several other regional names. *Mimosa pudica* grows most effectively in nutrient poor soil that allows for substantial water drainage. The plant is not tolerant to low levels of light and cold temperature. The roots of this plant are cylindrical with secondary and tertiary branches. Woody bark, stems are cylindrical and prickly with fibrous bark. Leaves are compound yellowish green. Flowers pink in colour, fruits are simple, dry 1-1.6 cm long, straw colored. Seeds are oval-elliptic. *Acharya Charaka* has mentioned *Lajjalu* in *Sandhaniya* and *Purisha Sangrahnaya Gana*. *Acharya Sushruta* and *Acharya Vagbhata* mentioned *Lajjalu* in *Priyavadi Gana*. *Acharya Bhavprakash* mentioned *Lajjalu* in *Guduchyadi Varga*. *Lajjalu* has been mentioned by various *Acharyas* in their *Nighantu*, like *Raj Nighantu*, *Adarsh Nighantu* and *Kaiydev Nighantu*. The leaves movement has been explained by thigmonastic movements, nastic movements and by tropism. Phytochemical studies revealed the presence of alkaloids, amino acid, flavonoids glycosides, sterols, terpenoids, tannins and fatty acids in this plant. *Lajjalu* is *Kashaya Tikta* in *Ras*, *Katu Vipak*, *Laghu Ruksha* and *Sheeta Veerya* and is described in ancient literature as *Raktpitta Nashak*, *Atisaar Nashak*, *Daha Nashak*, *Shopha Nashak*. *Lajjalu* is widely used in various Ayurvedic formulations like *Samangadi Churna*, *Lakshadi Churna* etc. *Mimosa pudica* possess Anti-microbial, Antioxidant, Anti-ulcer, Anti-diabetic, Anti-venom, Anti-inflammatory and wound healing properties.

CONCLUSION

Mimosa pudica is truly a plant of great importance with so many medicinal properties. *Mimosa pudica* possess many pharmacological properties and is effective in

various diseases and bleeding disorders. However there is a need of further study and clinical trials to evaluate safety and dose of drug in various diseases.

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