Journal of Advanced Pharmacy and Drug Development
www.japdd.com

Review Article

Mimosa pudica Linn: A Comprehensive Review on Phytochemical, Pharmacology, and Therapeutic Potential

Harshitha S[1], Shilpa R[1], Abhishek K S[1], Spandana A R[1], Nischith S S[2]

1. Department of Pharmacology, Bharathi College of Pharmacy, Bharathinagara – 571422.
2. Department of Pharmacognosy, Faculty of Pharmacy, Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University, B G Nagar, Karnataka, 571448

***Corresponding author:**
Ms. Spandana A R,
Department of Pharmacology,
Bharathi College of Pharmacy,
Bharathinagara - 571422,
Karnataka, India.

Email id:
spandanaar235@gmail.com

Received on: 11 September 2025
Revised on: 24 September 2025
Accepted on: 30 September 2025

DOI:
https://doi.org/10.64842/bnchm998

Scan QR to visit JAPDD

Abstract

Mimosa pudica is recognized as a sensitive plant. It is derived from the Latin word "pudica," which means shy or shrinking. Commonly known as the touch-me-not, it is a creeping annual and perennial herb. This species originates from South America and Central America. Mimosa is classified within the taxonomic group Magnoliopsida and is a member of the family *Mimosoideae.* The plant exhibits a responsive behavior by folding its leaves upon contact, subsequently reopening them. The characteristics of *Mimosa pudica* roots include bitterness, astringency, acridity, and a cooling effect. These substances are utilized in addressing conditions such as ulcers, inflammation, asthma, diarrhea, urinary issues, and fistulas. The plant is characterized by the presence of the alkaloid mimosine, while its leaf extract is noted for containing a substance similar to adrenaline. *Mimosa pudica* has a historical application in addressing urogenital disorders, dysentery, sinus issues, and in the treatment of wounds. Juices derived from fresh leaves may be utilized for both internal and external applications in the treatment of cuts and wounds. It is additionally utilized for external application on fissures, skin wounds, and ulcers. The hemostatic properties of *Mimosa pudica* contribute to the management of bleeding associated with piles. This research sought to investigate and gather various Pharmacognostic characteristics of *M. pudica.* It also represents a significant and contentious species derived from natural sources, holding great potential for future research, necessitating further investigation.

Keywords: *Mimosa pudica,* Phytochemistry, Pharmacology, Therapeutic potential, Traditional medicine, antimicrobial activity, Antioxidant activity, Wound healing.

Introduction

Mimosa pudica is known by numerous names, including sensitive plants, touch me not, humble plants, and shame plants. It belongs to the family *Mimosoideae* and is known by different names in different parts of the world [1]. *Mimosa pudica* is a creeping annual or perennial herb. It was first formally introduced by Carl Linnaeus in Species Plantarum in 1753. The word '*Mimosa*" is obtained by a Greek word means mimic and "*pudica*" is a Latin word which has a meaning, shy.

Folding movement of leaves observed by this plant, which undergoes changes in leaf orientation at night, is called nyctinasty movement and is controlled by a biological clock. The plant has 500 species and is approximately 50-70 cm high [2]. *Mimosa pudica* has compound leaves and small globular pink or mauve flower puffs. It is commonly grown as curiosity in greenhouses [3]. Phytochemical studies of It have revealed the presence of alkaloids, non-protein amino acids (mimosine), flavonoid C-glycosides, sterols, terpenoids, tannins, and fatty acids. *Mimosa pudica* (Lajwanti) or Chui Mui is a creeper belonging to the Fabaceae family. Ayurveda describes Lajwanti as tikta (bitter), kashaya (astringent), and sheetha (cold)[4]. Epidemiological studies have shown that it contains metabolites such as phenols and flavonoid compounds, which possess pharmacological properties such as antidiabetic, antimicrobial, antiulcer, antidepressants, and anti-inflammatory. Ecological studies have shown that *M. pudica* grows in all types of soil and can survive in soils with low nutrient concentrations. This usually requires disturbed soil for establishment. It is commonly seen in the wastelands and along roadsides, and is an ethnomedical plant that may be used to manage various types of diseases.[5] It is used in traditional medicine, such as Ayurveda and Unani, to treat a range of conditions, including digestive issues such as diarrhea and dysentery, skin problems such as ulcers and infections, respiratory ailments such as asthma and bronchitis, sleep disorders, epilepsy, weakness, and female reproductive health issues such as vaginal and uterine infections. The plant contains beneficial chemicals, such as alkaloids, flavonoids, tannins, and mimosine, which provide these healing qualities. However, it is a troublesome invasive species in tropical regions. It frequently overruns crops such as corn, soybeans, rice, cotton, bananas, sugarcane, coffee, and rubber, forming dense mats that block other plants, have thorny stems that complicate manual removal, and can even increase the risk of wildfire when dry. Overall, *Mimosa pudica* is both a valuable medicinal herb and persistent agricultural pest.[6] In folklore medicine, the entire plant parts, such as the roots, leaves, and flowers, are used in the treatment of several diseases, including dysentery, leprosy, pile, skin diseases, leukoderma, fever, cough, cholera, tuberculosis, biliousness, burning sensation, uterine problems, cancer, rheumatism, edema, elephantiasis, syphilis, and jaundice [10-15]. It can also be used as an antidote for snakebites and scorpion stings. This plant can be used as an herbal treatment. M. pudica is the most important controversial and effective natural origin and has a tremendous future for research [7].

Taxonomy: [8]

Kingdom: Plantae

Division: Mangoliophyta

Phylum: Tracheophyta

Class: Magnoliopsida

Clade: Tracheophytes (vascular plants)

Clade: Angiosperms (flowering plants)

Order: Fabales

Family: *Fabaceae (Leguminosae)*

Subfamily: *Mimosoideae*

Species: *Mimosa*

Genus: *Mimosa pudica*

Sub-species: *Mimosa pudica*

VERNACULAR NAME:[2]

Kannada – Lajja, Nachika and Mudugu-davar

English – Sensitive plant

Hindi – Laajvanti and Chhui-mui

Telugu – Attapatti and Peddanidrakanni

Tamil – Tottaaladi and Thottalchnungi

Botanical Description:[9]

Mimosa pudica, also known as the sensitive or touch-me-not plant, is a low-growing, prickly subshrub native to South and Central America, but is now pantropical. It typically reaches approximately 30–50 cm tall and spreads similarly, with slender, branching stems covered in spines. Its fern-like, bipinnate leaves consist of 15–25 pairs of small, bristly leaflets that rapidly fold inward when touched, shaken, or even in darkness, a defense mechanism driven by changes in turgor pressure in specialized joints called pulvini. The plant produces clusters of pale pink to lilac globe-like flowers in the leaf axils, followed by curved, prickly pods measuring 1.5–2.5 cm long. In India, it flowers between August and October. This species was first introduced by Carl Linnaeus in 1753 to Plantarum.

Table 1 Botanical description of Mimosa pudica

Characters	*Mimosa pudica*
Plant	Short prickly branches, hairs glandular
Leaves	Bipinnate, sensitive to touch
Flowers	Axillary, globose head, lilac pink in colour
Stem	Erect, slender, prickly and well branched
Calyxes	Campanulate
Petals	Petals crenate towards base
Pods	1.5–2.5 cm long, closely prickly on sutures and falcate
Flowering and Fruiting time	August to October in India

Distribution And Habitat:[3]

Mimosa pudica is found in many parts of Asia, including Singapore, Bangladesh, Thailand, India, Nepal, Indonesia, Taiwan, Malaysia, Vietnam, Cambodia, Laos, Japan, Sri Lanka, and Philippines. It has also reached other places, such as Uganda, Ghana, Nigeria, Seychelles, Mauritius, and East Asia.

Philippines *Mimosa pudica* grows almost everywhere in the Philippines. It can be observed on roadsides, empty lots, farms, and grassy fields. In Angat and Bulacan, the plant is common in open spaces and areas where the soil has been disturbed. It spreads easily because of its seeds and its ability to grow in many types of soil. It loves sunlight and warm weather, which is why it grows well in tropical areas, such as the Philippines.

Although *Mimosa pudica* is common, it is not considered a major problem in the Philippines. However, in other countries, it is known to be an invasive species. This means that it spreads too much and can take over land where native plants are expected

to grow. In countries like Tanzania and many Pacific islands, *Mimosa pudica* is a threat to the environment in countries such as Tanzania and many Pacific islands. In Australia, it has even been declared a weed in some parts, such as the Northern Territory and Western Australia. In Queensland, people are advised to control growth.

In the United States, *Mimosa pudica* grows in states such as Louisiana, Florida, Hawaii, Texas, and others. It is also found in places such as Puerto Rico, Guam, and Virgin Islands.

In Angat, Bulacan, *Mimosa pudica* is a part of the local environment. It does not cause major problems, but can spread quickly if not controlled. Farmers and gardeners may remove it if they take up too much space or compete with the crops.

Mimosa pudica is known for its movement. It also has small pink or purple flowers and tiny thorns on its stem. Some people have used it in traditional medicine. It is believed to help treat minor wounds or skin problems, but people should always be careful and ask experts before using plants as medicines.

Mimosa pudica is a plant that grows in Angat, Bulacan, and many other parts of the Philippines. Although not native to the country, it has become common. It is interesting and fun to observe how they move. While it is a problem in some countries, in the Philippines it is mostly just a part of the native country.

Cultivation And Collection:[10]

This plant grows naturally in warm tropical areas, but also spreads to subtropical regions. It can grow well even in hilly places up to 1,300 meters above sea level. The best temperature for growth is between 22°C and 28°C, it can survive at temperatures as low as 10°C and as high as 32°C. However, they cannot survive in cold or frosty weather.

The plant prefers places where the rainfall is between 1,000 to 2,000 millimeters per year, but it can still grow in areas where the rainfall is as low as 900 mm or as high as 3,000 mm. It grows best in sunny places, but can also survive in shaded areas, although it may not grow as well. They can live in many types of soil, even if the soil is shallow or does not have many nutrients. The ideal soil pH is between 6 and 7, but it can tolerate a pH range of 5 to 7.5. It is also effective at surviving in humid and windy areas.

This plant has spread widely and has become common in many tropics and subtropics. It often grows in forests, farmlands, orchards, and pastures. Occasionally, it becomes a problem and is considered a weed, especially in dry farmlands, rice fields, and plantations. When the plant dries up, it can easily catch fire, which makes it dangerous during dry seasons.

Pharmacological activities of *Mimosa pudica*:

Wound healing activity:[11]

A 2% w/w methanolic extract of *Mimosa pudica* (Linn.) promoted faster wound healing. Compared with the control group, wounds treated with this extract showed quicker epithelialization and a higher rate of wound contraction on days 8, 12, and 16. The aqueous extract of 2% w/w *Mimosa pudica* also proved effective when applied topically to wounds, helping increase cell growth and collagen production at the injury site, which was confirmed by improved wound strength.

Additionally, there was a higher level of hydroxyproline in the wound scabs, supporting the healing process. Overall, while both methanolic and aqueous root extracts aided wound healing, the 2% w/w methanolic extract showed the best results. This suggests that the roots of *Mimosa pudica* are potentially useful in treating wounds.

Anti-Diabetic activity:[12]

In the present study, the antidiabetic potential of the leaves of *Mimosa pudica* Linn., a member of the family Mimosaceae, was investigated. The ethanolic and petroleum ether extracts of *Mimosa pudica* were tested and compared with metformin, a standard antidiabetic drug. Diabetes was induced in Wistar rats of both sexes by using alloxan. Plasma glucose levels were measured using the Glucose Oxidase-Peroxidase method. The ethanolic extract significantly reduced blood glucose levels.

Hepatoprotective Activity:[13]

Mimosa pudica plant, also known as the "Touch-me-not" plant, has been studied for its ability to protect the liver. In this study, the methanolic extract of *M. pudica* was tested in rats whose livers were damaged by a harmful chemical called carbon tetrachloride (CCl_4). This chemical is known to cause liver injury and is often used in scientific studies to test liver-protective medicines. The rats were orally administered 200 mg of *Mimosa pudica* extract per kilogram of body weight. After the treatment, blood samples were collected and tested for signs of liver damage. The results showed that the extract exerted a significant protective effect on the liver. Several harmful markers in the blood, such as SGOT, SGPT, ALP, total bilirubin, and cholesterol were lower in rats that received the extract. These substances usually increase in concentration when the liver is injured.

Anti-Microbial Activity:[14]

The methanolic extract of *Mimosa pudica* leaves demonstrated notable antimicrobial activity when tested at various concentrations (50, 100, and 200 µg/ml) against several microorganisms, including Aspergillus fumigatus, Citrobacter divergens, and Klebsiella pneumoniae. The extract exhibited excellent antimicrobial effects that were attributed to the presence of several bioactive compounds. Phytochemical analysis revealed that terpenoids, flavonoids, glycosides, alkaloids, quinones, phenols, tannins, saponins, and coumarins were present in the extract, and these constituents may play a significant role in their antimicrobial potential. Antimicrobial mechanisms may involve the disruption of microbial cell membranes, inhibition of enzymes, or interference with genetic material. Flavonoids and alkaloids are known for their broad-spectrum antimicrobial properties. In a related study, Gandhiraja *et al.* (2009) further confirmed the antifungal activity of both methanolic and aqueous extracts of Mimosa pudica, specifically against fungal pathogens such as Aspergillus fumigatus, using the well diffusion assay method. Their findings support earlier observations and highlight the potential use of plants in treating fungal infections. Overall, these studies suggest that *Mimosa pudica* could be a promising natural source of antimicrobial agents and potentially useful in the development of herbal medicines for bacterial and

fungal diseases.

Anti-Oxidant Activity:[15]

The ethanolic extract of *Mimosa pudica* was tested for antioxidant activity using various standard methods such as DPPH, Nitric Oxide, ABTS, and Hydrogen Peroxide free radical models. The extract exhibited a strong ability to protect against free radical damage. It was especially effective in reducing Nitric Oxide and DPPH free radicals, with IC50 values of 78.1±1.75 µg/ml and 35.00±1.15 µg/ml, respectively.

Anti-Hypolipidemic Activity:[16]

For hypolipidemic activity, the 80% ethanol extract of the whole plant of *Mimosa pudica* was tested for its hypolipidemic (fat-lowering) effects in diabetic male albino Wistar rats. In diabetic rats, the plant extract and the standard drug glibenclamide significantly reduced the levels of total cholesterol (TC), triglycerides (TG), and low-density lipoprotein (LDL). At a dose of 500 mg/kg body weight, the plant extract also increased the levels of high-density lipoprotein (HDL), which is the "good" cholesterol. These results suggest that M. pudica helps to lower blood fat levels and may reduce the risk of heart disease in diabetic rats.

Another study by Purkayastha et al. showed that an ethanol extract of M. pudica leaves had hypolipidemic effects in Wistar albino rats with liver damage caused by carbon tetrachloride (CCl_4). The extract, at a dose of 400 mg/kg, significantly reduced levels of triglycerides (96.8 mg/dL), total cholesterol (98.7 mg/dL), very low-density lipoprotein (VLDL) (26.9 mg/dL), and LDL (37.4 mg/dL), while HDL was found to be 34.3 mg/dL.

Diuretic Activity:[17]

The ethanolic extract of *Mimosa pudica* showed strong diuretic effects and increased urine output at doses of 100 mg/kg and 200 mg/kg. Similarly, the leaf decoction of the plant showed diuretic activity in dogs and rats at doses of 200, 500, 1000, and 2000 mg/kg, with a noticeable decrease in chloride (Cl-) and sodium (Na^+) levels, but did not affect potassium (K^+) excretion. In another study of Wistar albino rats administered aqueous leaf extract at doses of 100, 200, and 400 mg/kg, an increase in Na^+, K^+, and Cl^- was observed at a dose of 100 mg/kg. Both ethanolic and aqueous extracts of *Mimosa pudica* were tested for diuretic effects using furosemide (20 mg/kg].

Anti-Ulcer Activity:[11]

The anti-ulcer potential of *Mimosa pudica* extracts was investigated in albino rats using various solvents: 90% ethanol, methanol, chloroform, and diethyl ether. Multiple ulcer models were employed to evaluate efficacy, including aspirin-induced, alcohol-induced, and pylorus ligation-induced ulcers. Key parameters measured included the ulcer index, gastric protection, volume of gastric juice, and both free and total acidity of gastric secretions. The extracts were administered orally at doses of 100 and 200 mg/kg, with ranitidine (20 mg/kg) as the standard reference drug. Toxicity studies indicated that the extracts were safe up to a dose of 2000 mg/kg. Among the tested doses, 100 mg/kg extract showed particularly significant anti-ulcer activity.

Anti- Estrogenic Activity:[17]

The anti-estrogenic activity of *Mimosa pudica* root powder was evaluated using immature female rats as an

experimental model. This study focused on determining the estrogenic and anti-estrogenic properties of the plant material. To assess estrogenic activity, researchers have employed the uterotrophic assay, which involves measuring changes in uterine weight. These findings indicated that administration of M. pudica root powder alone did not lead to a significant increase in uterine weight, suggesting an absence of intrinsic estrogenic activity. To evaluate anti-estrogenic effects, estradiol monobenzoate, a known estrogen, was administered to induce uterine growth. In animals treated with both estradiol monobenzoate and *M. pudica* root powder, the expected increase in uterine weight was significantly reduced, indicating that root powder effectively counteracted the estrogenic action of estradiol monobenzoate. These results demonstrate that, while M. pudica root powder does not exhibit estrogenic properties on its own, it possesses notable anti-estrogenic activity by inhibiting the uterotrophic effects induced by exogenous estrogen.

Acknowledgement

I sincerely thank the department of pharmacology, Bharathi college of pharmacy, for encouragement and guidance during the review process.

Conflict of Interest

The authors declare no conflict of interest.

Conclusion:

This overview provides a comprehensive review of the traditional use of *Mimosa pudica* in treating various diseases, along with the extensive biological activities that have been well-documented. Its broad pharmacological effects, such as treatment of ulcers, inflammation, asthma, diarrhea, urinary complaints, and fistula, have also been used traditionally in the treatment of urogenital disorders, dysentery, sinus, and wounds. Juices prepared from fresh leaves can be used both internally and externally in piles to treat cuts and wounds. This study is an attempt to explore and compile different Pharmacognostic aspects of the plant M. pudica, which requires further investigation.

References:

1. Adurosakin OE, Iweala EJ, Otike JO, Dike ED, Uche ME, Owanta JI, Ugbogu OC, Chinedu SN, Ugbogu EA. Ethnomedicinal uses, phytochemistry, pharmacological activities and toxicological effects of *Mimosa pudica*-A review. Pharmacological Research-Modern Chinese Medicine. 2023 Jun 1;7:100241.
2. Ahmad H, Sehgal S, Mishra A, Gupta R. *Mimosa pudica* L.(Laajvanti): an overview. Pharmacognosy reviews. 2012 Jul;6(12):115.
3. Hagihara T, Toyota M. Mechanical signaling in the sensitive plant *Mimosa pudica* L. Plants. 2020 May 4;9(5):587.
4. Jagetia GC, Vanlalhruaii F. Anticancer potential of *Mimosa pudica* Linn. Lajwanti in cultured Dalton's ascites lymphoma cells. International Journal of Complementary and Alternative Medicine. 2020;13(3):91-4.
5. Hassan NA, Karunakaran RO, Abdulmumin SU. A review on the pharmacological and traditional

properties of *Mimosa pudica*. Int J Pharm Pharm Sci. 2019;11(3):12-6.

6. Gunawardhana CB, Ranasinghe SJ, Waisundara VY. *Mimosa pudica* Linn.: the garden weed with therapeutic properties. Israel Journal of Plant Sciences. 2015 May 18;62(4):234-41.
7. Shaikh Z, Roy SP, Patel P, Gohil K. Medicinal value of *Mimosa pudica* as an anxiolytic and antidepressant: A comprehensive review. World journal of pharmacy and pharmaceutical sciences. 2016 Jan 13;5(3):420-32.
8. Muhammad G, Hussain MA, Jantan I, Bukhari SN. *Mimosa pudica* L., a high-value medicinal plant as a source of bioactives for pharmaceuticals. Comprehensive Reviews in Food Science and Food Safety. 2016 Mar;15(2):303-15.
9. Joseph B, George J, Mohan J. Pharmacology and traditional uses of Mimosa pudica. International journal of pharmaceutical sciences and drug research. 2013 Apr 1;5(2):41-4.
10. Tripathi AK, Soni R, Verma S. A review on ethnopharmacological applications, pharmacological activities, and bioactive compounds of *Mimosa pudica* (linn.). Research Journal of Pharmacy and Technology. 2022;15(9):4293-9.
11. Sankari S. Antioxidant and Antidiabetic Efficacy of Mimosa Pudica: A Phytochemical Perspective.
12. Zaware BB, Chaudhari SR, Shinde MT. An overview of *Mimosa pudica* Linn.: chemistry and pharmacological profile.
13. Rawat D, Kumar H, Kumar A, Kumar V, Kumar S. Ethnomedicinal and pharmacological aspects of *Mimosa pudica* plant.
14. Azmi L, Singh MK, Akhtar AK. Pharmacological and biological overview on *Mimosa pudica* Linn. International journal of pharmacy & life sciences. 2011 Nov 1;2(11).
15. Majeed I, Rizwan K, Ashar A, Rasheed T, Amarowicz R, Kausar H, Zia-Ul-Haq M, Marceanu LG. A comprehensive review of the ethnotraditional uses and biological and pharmacological potential of the genus mimosa. International Journal of Molecular Sciences. 2021 Jul 12;22(14):7463.
16. Wagh C, Bangar S, Gawade M, Shirke H. ItL (*Mimosaceae*) herb with impressive health benefits
17. Ughade M, Chaudhary PH, Burange PJ, Baig A, Pawar D, Warhekar T, Deshmukh V, Darokar P. A comprehensive review On *Mimosa pudica* Linn.

How to cite this article:
Harshita S, Shilpa R, Abhishek KS, Spandana AR, Nischith SS. *Mimosa pudica* Linn: A comprehensive review on phytochem, pharmacology, and therapeutic potential. J Adv Pharm Drug Dev..2025;1(1):38–45. doi: 10.64842/bnchm998