



***MIMOSA PUDICA*: A REVIEW ON PHARMACOLOGICAL ACTIVITIES**

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Abstract

The medicinal plants are widely used by the traditional medical practitioners for curing various diseases in their day to day practice. *Mimosa pudica* Linn. is a commonly used herb in Ayurvedic medicine belonging to the Mimosaceae family. It is used in ethnomedicine to prevent or treat various illnesses like diarrhoea, dysentery, diabetes, alopecia, cancer and urinary tract infection. This review supports all updated information on its phytochemical and pharmacological activities. The plant extract have been widely used for the treatment of a large number of human ailments. The chemical entities of this plant have been used as an antidiabetic, antibacterial, anti-inflammatory, antifungal, antinociceptive, anti androgenic, anticonvulsant, antioxidant, and anti-tumor, anti ulcer agents. *M. pudica* is the most important controversial and effective natural origin that has a tremendous future for research. The novelty and applicability of *M. pudica* are hidden. Such things should be overcome through modern scientific concept.

Key-words: *Mimosa pudica*, Lajawanti, Mimosine, flavonoids, Anti microbial, Anti depressant, Wound healing effect.

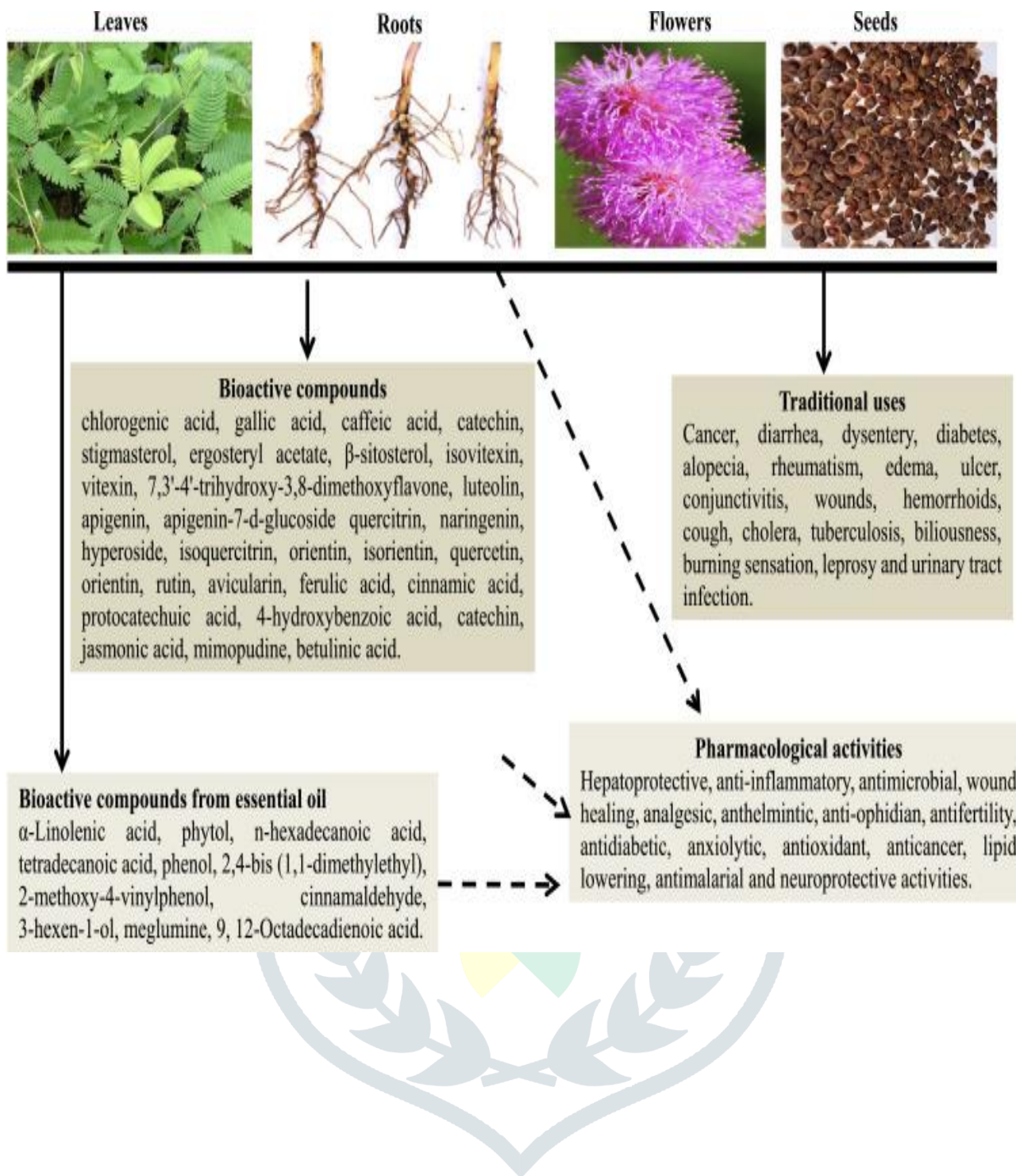
Introduction

Medicinal plants and their bioactive compounds are used world wide to treat and prevent many diseases. Today, it is believed that about 80% of the world's population depends mainly on medicinal plants or herbal medicines for the treatment, prevention and management of various diseases. The efficacy of the active components contained in herbal medicine to function as natural therapeutic agents, as well as their availability, accessibility, affordability, and lauded reduced or non-toxic effects, may explain the growing preference for herbal medicines over conventional treatments. Furthermore, medicinal plants and their bioactive substances have piqued the interest of various researchers in the recent decade due to their use in the treatment and prevention of life-threatening and chronic illnesses like a cerebrovascular accident, diabetes, stroke, and arthritis and as an alternative therapy for psychiatric diseases and in meeting the health needs of the elderly. (Oluwapelumi E. Adurosakin et al.2023)

Mimosa pudica Linn. belongs to family Mimosaceae. It is a creeping annual or perennial shrub with compound leaves, spiny stipules, and globose pinkish flower heads. It is native to Brazil and has been naturalized throughout the world. (Gulzar Muhammad et al.2016)

M.pudica is an annual or perennial shrub with erect stems in young plants which modifies to creeping with age. It attains a height of 1 to 2 m with compound bipinnate leaves having 1 to 2 pinnae pairs and each pinna contains 15 to 25 leaflets. The plant has red-colored prickly petioles and pink filaments. A fruit has 2 to 8 pods, which are 3 mm broad and 1 to 1.5 cm long. Each pod has 2 to 5 segments in which brown seeds (2.5 mm) long are embedded. It is a multipurpose tree, used as vegetable, spice, a source of cooking and cosmetic oil and as a medicinal plant. It is known as Sensitive plant in English, Ajalikalika in Sanskrit, Lajawanti in Hindi, Lajjabate in Bangali, Hadergitte in Kannada, Kasirottam in Tamil and Manugumaramu in Telgu. (Lubna Azmi et al.2011)

Mimosa pudica L. is a very sensitive and invasive plant with leaves that fold in reaction to stimuli such as vibration, light, wounds, wind, touch, heat, and cold. Apart from its usage as an ornamental plant, *M. pudica* is well-known in Nigeria and other parts of the globe for its therapeutic and preventive properties. In folklore medicine, the entire plant is used, especially the roots, leaves, and flower, in the treatment of several diseases such as dysentery, leprosy, pile, skin diseases, leukoderma, fever, cough, cholera, tuberculosis, biliousness, burning sensation, uterine problems, cancer, rheumatism, oedema, elephantiasis, syphilis and jaundice. It is also used as an antidote for snake bites and scorpion stings. Today, *M. pudica* is a mainstay in Greco-Arab, Ayurveda, and Chinese medicine because of its numerous uses and advantages. Initially, *M. pudica* was used as an ornamental plant in the Taiwan province of China as a source of green manure, fodder crops and for the production of honey. However, it has now found application in traditional Chinese medicine (TCM) for treating tuberculosis, insomnia, anxiety, neurasthenia, depression, traumatic injuries, rheumatoid arthritis, diabetics and wounds. Additionally, research has reported its use in Zoster therapy and the treatment of kidney disease. Tannins, flavonoids, terpenoids, saponins, sterols, alkaloids and phenols are some of the plant constituents revealed by the phytochemical screening of *M. pudica*. *M. pudica* has a variety of pharmacological properties, including hepatoprotective, anti-inflammatory, antimicrobial, wound healing, analgesic, antidiabetic, anxiolytic, antioxidant, anticancer, hypolipidemic, neuroprotective, immunological, diuretic, anthelmintic, antiophidian, antifertility, antidepressant and sedative activities. (Oluwapelumi E. Adurosakin et al.2023)



Phytochemistry of *Mimosa pudica*

Several studies have shown several biochemical substances involved in the contractility of the leaves. Fresh tissues give nor-epinephrine, D-pinitol (3-mono-methyl ether of inositol), and b-sitosterol. Leaves contain alkaloids. An alkaloid mimosine has been isolated from the plant. The preliminary phytochemical screening of the *M. pudica* leaf extract showed the presence of bioactive components such as terpenoids, flavonoids, glycosides, alkaloids, quinines, phenols, tannins, saponins, and coumarins. (Hafsa Ahmad et al.2012)

Chemical constituent of *M. Pudica*

Parts Chemical constituents

Stem	Mimosine, 5-MeO-DMT, β -[N-(3-hydroxypyridone-4)]- α aminopropionic acid.
Root	Mimosine, alkaloids, amino acids, glycoside, fatty acid, flavonoid, phytosterol and tannins. crocetin, ascorbic acid, D-glucuronic acid, linoleic acid, D-xylose and B-sitosterols.
Leaves	Tyrosin, vitexin, nor-epinephrine, d-pinitol, b-sitosterol, alkaloids- mimosine, terpenoids, flavonoids, glycosides, alkaloids, phenols, tannins, saponins, and coumarins, polyunsaturated fatty acid, sphingosine, adrenalin, 5-MeO-DMT, 5,7,3',4'-tetrahydroxy-6-C-[B-Dapiose-(1→4)]- β -D-glycopyranosyl flavone.

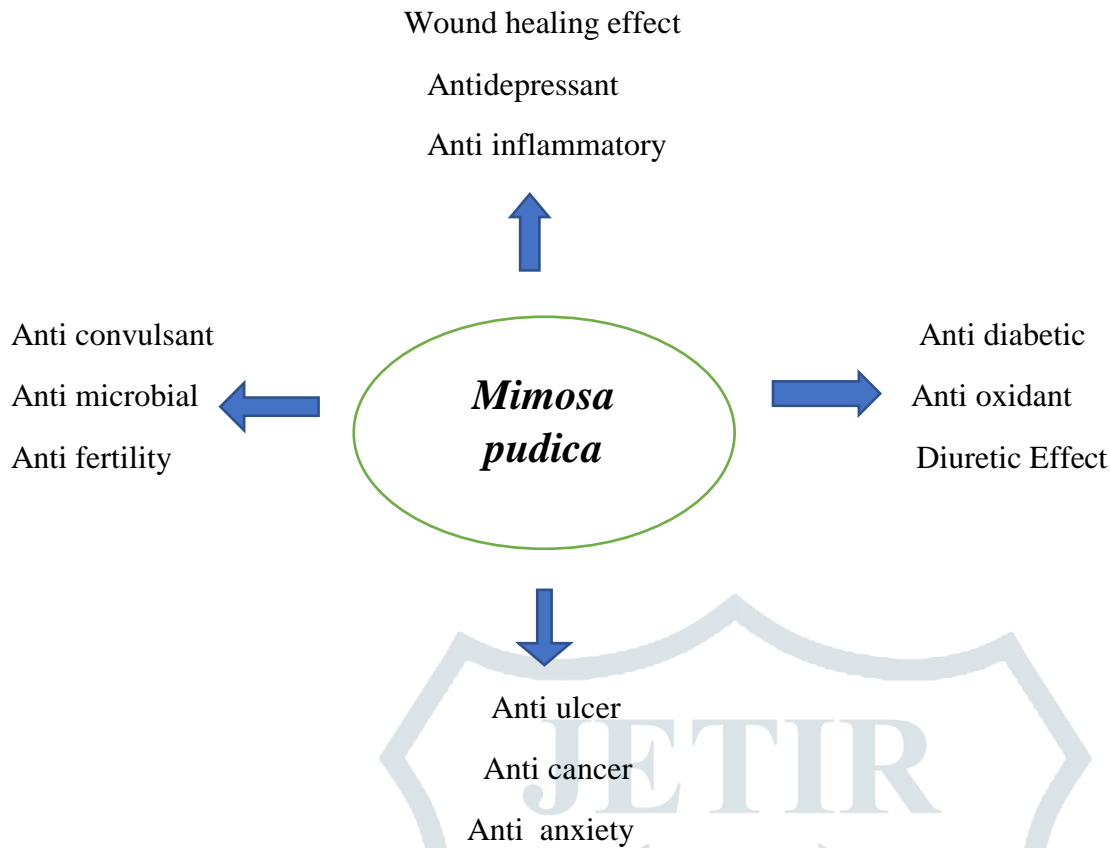
(Ndanusa Abdullahi Hassan et al.2019)

Ethnopharmacological uses of *M. pudica*

In traditional medicine, different parts of *M. pudica* are widely used in treating various diseases. *M. pudica* decoction treats dysentery, leprosy, pile, urinary problems, skin diseases, leukoderma, and jaundice. the parts of *M. pudica* are used to treat fever, cough, cholera, tuberculosis, biliousness, burning sensation, uterine problems and syphilis. Due to its apoptotic effects, the whole plant parts have been used for cancer treatment in ethnomedicine, it has also been used to treat myalgia and rheumatism. Various parts of *M. pudica* are used as an antidote for snake bites and scorpion stings. The leaves and seeds decoction is used to treat urinary tract infections. The leaves are used to treat ulcers, conjunctivitis, wounds, haemorrhoids, and haemorrhages. It is also applied on the forehead for migraine and headache relief. In countries such as Bangladesh, India, and the Philippines, the plant is used as an alternative treatment option for pruritus and other infections of the skin. *M. pudica* roots are used to treat smallpox, ulcers, dysentery, fever, asthma, jaundice, and haemorrhoids. The antibacterial and wound-healing properties of *M. pudica* have been reported. *M. pudica* extract is used in Cameroon to treat several ailments, including headaches, sleeplessness, and anxiety disorders. (A.R. Mbomo et al.2012)

Pharmacological properties

Mimosa pudica is traditionally very important herb having many important pharmacological activities like Wound healing effect, Antidepressant, Anti inflammatory, Anti convulsant, Anti microbial, Anti fertility, Anti diabetic, Anti oxidant, Diuretic, Anti ulcer and Analgesic properties.



Wound Healing Effect

Kokane DD et al.(2009) reported that methanol and aqueous extracts of *M. pudica* roots were evaluated for wound healing activity in rats by incision and excision models. An ointment 2% w/w of each extract was prepared. It was investigated that the methanol extract had better wound-healing tendency than the aqueous extract. This wound-healing activity may be attributed to phenolic compounds that are generally present in methanol 17% w/w and aqueous 11% w/w extracts.

M.P.Singh et al.(2010) revealed that excision model fast epithelization and wound contraction were observed in the extract-treated wound and the burn wound model, extract treated wound showed 73% and 92 % reduction in wound area compared to control 20%, displaying significant wound healing activity.

Venkateshwarlu G et al.(2011) reported to be performed by using excision and incision wound models for screening of wound healing, which reveals that *Mimosa pudica* chloroform extract posses significant wound healing at dose of 200mg/kg in 5% ointment of leaf extract.

Ndanusa Abdullahi Hassan et al.(2019) studied that Damage in living tissue caused by a cut, blow, or other impacts is termed as a wound. *M. pudica* chloroform extract possess wound healing activity at a dose of 200 mg/kg in 5% ointment of the leaf extracts. At the end of the experiment the administration of *M. pudica* extracts of different concentration increased the wound contraction in a dose-dependent manner, and also reduction in wound healing time was observed.

Antidepressant activity

Hafsa Ahmad et al.(2012) investigated that in the study behavioral actions of aqueous extracts of *M. pudica* at various concentrations were tested. Results showed that clomipramine 1.25 mg/kg, desipramine 2.14 mg/kg and *M. pudica* 6.0 mg/kg and 8.0 mg/kg . reduced immobility in the forced swimming test and increased the rate of reinforces received in the DRL-72 s test; these data suggested that *M. pudica* produces antidepressant effects in the rat. *M. pudica* therefore produced an anti-depressant like profile similar to two tricyclic anti- depressants.

Irfan Sajid et al.(2013) reported that the aqueous extract of *M. pudica* is employed to reduce depression in Mexico. study showed that behavioural actions of *M. pudica* extract at different concentration was tested. Results showed that *M. pudica* extracts, clomipramine, desipramine reduced immobility in the forced swimming test and increased the rate of reinforcers received in the DRL-72s test, results showed that *M. pudica* produces antidepressant effects in rats.

Sanaye M. M et al.(2015) investigated that the open field test (OFT) is a commonly used for measure of general locomotor activity and also to assess anxiety, depression. In addition, repeated exposure or extended session length provides a method for assessing habituation to the increasingly familiar chamber environment. it has been reported that, number of movements of animals and number of passage from chamber were significantly decreased in dose dependant manner at doses of 100 mg/kg and 200 mg/kg.

Gulzar Muhammad et al.(2016) noted that *M. pudica* extract increased mobility in the forced swimming test and reinforced the rate in DRL-72s like the standard drugs clomipramine and desipramine. The extract cannot increase open arms exploration time in the elevated plus maze test like diazepam. Studies concluded that *M. pudica* can produce antidepressant action.

Anti-inflammatory activity

NK Patel et al.(2014) reported that the lipopolysaccharide (LPS) induced pro-inflammatory mediators such as interleukin 1 beta (IL-1 β), tumour necrosis factor-alpha (TNF- α), and nitric oxide (NO) were suppressed by bioactive compounds (L-mimosine, ethyl gallate, crocetin, gallic acid, crocin, caffeic acid and jasmonic acid) present in *M. pudica*, thus supporting the ethnomedicinal uses of *M. pudica* for the prevention and treatment of inflammatory related disorders.

Azam et al.(2015) reported that the inhibitory effect of ethanolic extract of *M. pudica* against carrageenan-induced paw oedema in rats at various doses 100, 200 and 300 mg/kg.

Nair PV et al.(2017) investigated that the anti-inflammatory effect of the whole plant of *M. pudica*, in thirty albino rats of both sexes was used for the experiment. 200 mg/kg, 400 mg/kg and 800 mg/kg extracts of *M. pudica* was administered to three different groups, 800 mg/kg concentration was the highest percentage inhibition. The result from this recent study was showed that *M. pudica* has anti-inflammatory properties.

Anti convulsant activity

Ngo Bum E et al.(2004) reported that ethanolic extract of *Mimosa pudica* exhibit significant protection against tonic seizures in dose dependant manner, and maximum effect was observed at 200mg/kg.

Lubna Azmi et al.(2011) studied that the decoction of *M pudica* leaves was given intraperitoneally at dose of 1000–4000 mg/kg protected mice against pentylentetrazol and strychnine-induced seizures. *M. pudica* had no effect against picrotoxininduced seizures It also antagonized *N*-methyl-Daspartate- induced turning behavior. These properties could explain its use in African traditional medicine.

Alasyam N et al.(2014) in study reported that decoction of leaves of *Mimosa pudica* when injected i.p at dose of 1000–4000 mg/kg protected mice against pentylentetrazol and strychnine induced seizures.

Kshema Johnson et al.(2014) reported that the decoction of leaves of *M. pudica* when given intra peritoneal at a concentration of 1000-4000 mg/kg showed anti convulsant activity.

Anti microbial activity

Pawaskar SM et al.(2006) revealed from the result of the study that the *M. pudica* whole plant extract possesses good antimicrobial activity between the range of 7–18 mm against the pathogens used for screening.

N. Gandhiraja et al.(2009) tested the Antimicrobial efficacy of *M. pudica* methanolic leaf extract against *A. fumigatus*, *Citrobacter divergens* and *K. pneumonia* at different concentrations of 50, 100 and 200 µg/disc using the well-diffusion method. the extract showed a dose-dependent increase in the zone of inhibition against *A. fumigatus* and *K. pneumoni*.

S. Arokiyaraj et al.(2012) used the disk dilution method to evaluate the antibacterial efficacy of the methanolic extract of *M. pudica* against bacteria strains. *M. pudica* extract exhibited a significant antibacterial effect against tested bacteria justifying its use as a potential antimicrobial therapeutic agent.

Muhammad MT et al.(2015) investigated In the most recent study, air-dried *M. pudica* leaves were ground to powder and extracted with water and also with ethanol plus water (1:1). Both the aqueous and ethanolic extracts inhibited the growth of 2 fungi *Trichophyton verrucosum* and *T. soudanense* significantly. The extracts also showed moderate antifungal activity against *Microsporium ferrugineum* and *T. schoenleinii* .

Ndanusa Abdullahi Hassan et al.(2019) indicated that ethanolic extracts of *M. pudica* exhibited from being partially active to very active against the tested microorganism at all concentration from this study results .

Antifertility activity

S. Valsala et al.(2002) reported that the intragastric administration of 150 mg/kg of *M. pudica* root powder to female rats altered the estrous cycle pattern, reduced normal ova and significantly increased the number of degenerated ova.

M. Ganguly et al.(2007) evaluated that the effect of *M. pudica* extracts on the fertility of experimental mice. Antifertility efficacy was evident in the prolonged estrous cycle and reduction in the diestrous phase. Further analysis showed a decrease in several litters and suppression of FSH resulting in the disturbance of ovulation and estrous cycle.

Kshema Johnson et al.(2014) studied that the root powder of *M. pudica* when given intragastrically at a dose of 150 mg/kg body weight in female *Rattus norvegicus*. It altered the estrous cycle pattern. There was a significant reduction in the number of ova.

Anti diabetic activity

Tunna TS et al.(2015) investigated that recently, methanolic extract of aerial parts of *M. pudica* and its various fractions (ethyl acetate, acetone, and methanol) were found to inhibit the activity of diabetic enzymes like α -amylase and α -glucosidase. The extract and its fractions also showed free radical-scavenging activity as determined by 1,1- diphenyl-2-picrylhydrazyl-hydrate (DPPH), total flavonoid content, and total phenolic content assays. The study revealed that *M. pudica* is a potential candidate to treat diabetes.

Konsue et al.(2017) investigated that the antidiabetic effect of aqueous and hydroalcoholic extract of *M. pudica* on STZ induced diabetic rats. Results from the study indicated that *M. pudica* demonstrated an antihyperglycemic effect by significantly lowering FBG levels in diabetic animals.

Parasuraman et al.(2019) reported that glucose levels in streptozotocin (STZ)-induced diabetes in rats were reduced upon administration of up to 500 mg/kg of methanolic extract of *M.pudica*.

Singarapriyavardhanan et al.(2022) reported that oral administration of 400 mg/kg *M. pudica* extract for 21 days significantly reduced serum glucose levels in streptozotocin (STZ)-induced diabetes in rats.

Anti oxidant activity

Arokiyaraj S et al.(2012) claimed that methanol extract of *M. pudica* leaves possesses moderate antioxidant activity as determined by the thiocyanate method and DPPH assay. Phytochemical screening of *M. pudica* extracts

recognized the presence of tannins, alkaloids, flavanoids, terpenoids, and glycosides in methanol extract of *M. pudica* leaves.

M.A. Almalki (2016) utilized hydroxyl, DPPH, nitric oxide and superoxide radical assay techniques in determining the radical scavenging activity of *M. pudica* aqueous extract. The hexane extracts from *M. pudica* elicited a significant scavenging effect on hydroxyl (IC₅₀ 19.37 mM) DPPH (IC₅₀ 20.83 mM), nitric oxide (IC₅₀ 21.62 mM) and superoxide (IC₅₀ 22.19 mM) radicals.

Parvathy et al.(2021) assessed that the free radical scavenging and the ferrous ion chelating activities of methanolic flower extracts of *M. pudica*. Findings from the experiment indicated that the extract at 250µg/ml produced percentage inhibition of 17.39 and 39.92% for nitric oxide and DPPH methods while also producing 59% inhibition in the ferrous chelating method thus showed that *M. pudica* extract possesses impressive antioxidant capacity.

Singarapriyavardhanan et al.(2022) reported that oral administration of 400 mg/kg ethanol and aqueous extracts of *M. pudica* for 21 days significantly improved vitamin C, vitamin E, and glutathione levels in streptozotocin (STZ)-induced diabetes in rats.

Diuretic activity

Sangma TK et al.(2010) extracted *M. pudica* leaves with water and the aqueous extract was fed to Wistar albino rats at doses of 100, 200, and 400 mg/kg. diuretic activity by the Lipschitz test was studied and results were compared with the standard drug furosemide. Colorimetry was used for biochemical analysis of urine collected from rats kept in metabolic cages. prominent increase in urine containing electrolytes (Na⁺, K⁺, and Cl⁻) at 100 mg/kg body weight was seen. although, diuretic activity was less than with the standard drug furosemide. It was also investigated that an increased Phytochemical screening revealed the presence of alkaloids, tannins, and saponins in the aqueous extract of *M. pudica* leaves.

Baghel A et al.(2013) reported that the Lipschitz test was employed for assessment of diuretic activity of petroleum ether, ethanolic and aqueous extracts of *Mimosa pudica* was based on water and sodium excretion in test animals and compared to rats treated with a high dose of urea. The ethanolic and aqueous extract of Plant was reported to be tested for evaluation of diuretic activity by using Furosemide 20 mg/kg as standard. Among two extracts ethanolic extract was reported to produce significant diuretic activity at doses of 100 and 200 mg/kg. Extract caused increase in total urine volume and ion concentration of Na⁺, Cl⁻, k⁺. at doses.

Bharati B Zaware et al.(2014) studied that the diuretic activity of *M. pudica* was first observed in methanol fraction of crude extract of the plant. Fractionation of the methanolic extract using column chromatography eluted a diuretically active subfraction. This was found to be nontoxic and increasingly diuretic at increasing dose levels. The median effective (ED₅₀) dose of the isolate was estimated to be approximately 1023.29mg/kg body weight. Then the diuretic activity of subfraction is compared with the following extracts (crude ethanol and water), normal saline solution (negative control) and furosemide (positive control).

Antiulcer activity

G.Vinothapooshan and K.Sundar (2010) reported that the parameters evaluated were ulcer protection, gastric ulcer protection and reduction in total volume of gastric juice, free and total acidity of gastric secretion, gastric ulcer respectively. 100 and 200 mg/kg dose levels of extract and 20 mg/kg of dose levels of standard drug Ranitidine were used orally. the extracts were found to be safe up to 2000mg/kg body weight- 100mg shown good activity.

Lubna Azmi et al.(2011) investigated that the aqueous extract at 200 and 400 mg/kg was showed significantly inhibited ulcer formation. There was a significant (P < 0.01) dose-dependent decrease in the ulcerative lesion index produced by all the three models in rats as compared to the standard drug lansoprazole.

Elango V et al.(2012) studied that the different types of solvent (90% methanol, chloroform and diethyl ether) was used for this extraction. Albino rats were used to investigate the antiulcer activity and was induced with alcohol and aspirin. The parameters obtained from this study shows that *M. pudica* has anti-ulcer properties.

Analgesic activity

Karthikeyan and Deepa (2009) investigated that *M. pudica* aqueous extract to determine its antinociceptive efficacy using acetic acid-induced writhing model in mice. Animals were pre-treated with 200 and 400 mg/kg of *M. pudica* extract, followed by an intraperitoneal injection of 10 mg/kg (0.6%) acetic acid. The extracts elicited significant ($p < 0.001$) inhibition of writhing response.

Vikram et al.(2012) determined that the analgesic effect of *M. pudica* using a series of tests involving pre-treatment of the test animals with 250 and 500 mg/kg ethanolic *M. pudica* extract. In the tail flick test (250/500mg/kg) *M. pudica* ethanol extract exhibited a dose dependent increase in latency time, and writhing responses showed that the number of acetic acid-induced writhing was significantly reduced by ethanolic extract of *M. pudica* administered orally at 250 mg/kg was 55.6 writhe while at 500 mg/kg showed 42.6 writhe reductions.

Aziz et al.(2014) evaluated that the anti-nociceptive effect of *M. pudica* on rats using the tail immersion test models showed Comparable results from the effect of methanolic, chloroform and ethanolic extract revealed ethanolic extract with the highest antinociceptive activity at 60 minutes at a dose of 500mg/kg. *M. pudica* extracts showed a similar anti-nociceptive to the standard drug diclofenac sodium.

Conclusion

M.pudica is used in the treatment, prevention or management of various diseases such as cancer, diarrhoea, dysentery, diabetes, alopecia, rheumatism, edema, gastric ulcer, conjunctivitis, wounds healing, hemorrhoids, cough, cholera, tuberculosis, biliousness, burning sensation, leprosy and urinary tract infection, and also as an antidote for snake bite and scorpion sting. *M. pudica* is traditionally very important herb having many important pharmacological activities like Wound healing effect, Antidepressant, Anti inflammatory, Anti convulsant, Anti microbial, Anti fertility, Anti diabetic, Anti oxidant, Diuretic, Anti ulcer and Analgesic properties. Many important phytoconstituents responsible for the activity were isolated. Phytochemical studies on *M.pudica* have shown that *M. pudica* has various bioactive constituents including polyphenols, flavonoids, phenolic acids, sterol, acid esters fluorinated aliphatic compounds isolated from various parts of *M. pudica* and its essential oil.

References

- Oluwapelumi E. Adurosakin, Emeka J. Iweala, Johnpaul O. Otikeye, Emmanuel Dike Dike, Miracle E. Uche, Julie I. Owanta, Ositadinma C. Ugbogu, Shalom N. Chinedu, Eziuche Amadike Ugbogu, Ethnomedicinal uses, phytochemistry, pharmacological activities and toxicological effects of *Mimosa pudica*- A review, Pharmacological Research - Modern Chinese Medicine 7, 100241,(2023).
- Gulzar Muhammad, Muhammad Ajaz Hussain, Ibrahim Jantan, and Syed Nasir Abbas Bukhari. *Mimosa pudica* L., a High-Value Medicinal Plant as a Source of Bioactives for Pharmaceuticals. Comprehensive Reviews in Food Science and Food Safety. Vol.15,(2016).
- Lubna Azmi*, Manish Kumar Singh and Ali Kamal Akhtar. Pharmacological and biological overview on *Mimosa pudica* Linn. international journal of pharmacy & life sciences. vol. 2, issue 11: nov., 1226-1234 1226,(2011).
- Hafsa Ahmad, Sakshi Sehgal, Anurag Mishra, Rajiv Gupta, *Mimosa pudica* L. (Laajvanti): An overview, Department of Pharmacognosy, Vol 6 ,Issue 12,(2012).
- A.R. Mbomo, S. Gartside, E. Ngo Bum, N. Njikam, E. Okello, R. McQuade, Effect of *mimosa pudica* (Linn.) extract on anxiety behaviour and GABAergic regulation of 5-HT neuronal activity in the mouse, J. Psychopharmacol. 26 (4), 575–583,(2012).
- Kokane DD, More RY, Kale MB, Nehete MN, Mehendale PC, Gadgoli CH, Evaluation of wound healing activity of root of *Mimosa pudica*. J Ethnopharmacol 124(2):311–5,(2009).

- M.P. Singh, S. Bharghava, R.S. Bhaduarua, C.S. Sharma, Wound healing potential of alcoholic extract of *Mimosa pudica* Linn. leaves, *Pharmacol*, 2, (2010).
- Venkateshwarlu G, Vijayabhaskar K, Pavankumar G, Kirankumar P, Harishbabu K, malothu R. Wound healing activity of *Mimosa Pudica* in albino wistar rats, *Journal of Chemical and Pharmaceutical research*,3(5),(2011).
- Ndanusa Abdullahi Hassan, rohini karunakaran, suleiman abdulmumin, A review on the pharmacological and traditional properties of *mimosa pudica*. *International Journal of Pharmacy and Pharmaceutical Sciences*.Vol 11, Issue 3, (2019).
- Irfan Sajid, Bijan Kumar Karmaker, Zamiul R, Islam MM, M Ekramul H, CNS depressant and antinociceptive activities of the aerial parts of *Mimosa pudica*. *Eur J Appl Sci*,5:127–33,(2013).
- Sanaye M.M, Joglekar C.S, Pagare N.P.Mimosa – A brief overview . *Journal of Pharmacognosy and Phytochemistry*, 4(2),(2015).
- N.K. Patel, K.K. Bhutani, Suppressive effects of *mimosa pudica* L.constituents on the production of LPS-induced pro-inflammatory mediators, *EXCLI J*. 13,1011–1021,(2014).
- S. Azam, A.F. Huda, K. Shams, Anti-inflammatory and antioxidant study of ethanolic extract of *Mimosa pudica*, *J. Young Pharm*,7 (3), 234–240,(2015).
- Nair PV, Bindu Latha RN. Anti-inflammatory activity of hydroalcoholic extract of *Mimosa pudica* whole plant in rats. *IntJ Basic Clin Pharmacol*,6:5,18–22,(2017).
- Ngo Bum E, Dawack DL, Schmutz M, Rakotonirina A, Rakotonirina SV, Portet C, Anticonvulsant activity of *Mimosa pudica* decoction, *Fitoterapia* , 75:309-314,(2004).
- Alasyam N, Sunil M, Jayasree T, Kumar VK, Nagesh C, Venkatanarayana N. Evaluation of anticonvulsant activity of alcoholic extract of *Mimosa pudica* in swiss albino rats, *Journal of chemical and pharmaceutical research*, 6(4),1175-1179,(2014).
- Kshema Johnson, Gopinathan Narasimhan and Chitra Krishnan. *mimosa pudica* linn- a shyness princess: a review of its plant movement, active constituents, uses and pharmacological activity. *International Journal of Pharmaceutical Sciences and Research*,Vol. 5(12): 5104-5118,(2014).
- Pawaskar SM, Kale KU. Antibacterial activity of successive extracts of *Mimosa pudica*. *Indian Drugs*,43;476-80,(2006).
- N. Gandhiraja, S. Sriram, V. Meenaa, J.K. Srilakshmi, C. Sasikumar, R. Rajeswari, Phytochemical screening and antimicrobial activity of the plant extracts of *Mimosa pudica* L. against selected microbes, *Ethnobot. Leafl*, 13,618–624,(2009).
- S. Arokiyaraj, N. Sripriya, R. Bhagya, B. Radhika, L. Prameela, N.K. Udayaprakash, Phytochemical screening, antibacterial and free radical scavenging effects of *Artemisia nilagirica*, *Mimosa pudica* and *Clerodendrum siphonanthus* - an in-vitro study, *Asian Pac. J. Trop. Biomed*, S601–S604,(2012).
- Muhammad MT, Abdullahi K, Shehu K, Shinkafi SA, Antifungal activity of *Mimosa pudica* leaves extracts against fungal isolates from razor bumps in Sokoto Metropolis, Nigeria. *Annals Biol Sci* 3(1),16–9,(2015).
- S. Valsala, P.R. Karpagaganapathy, Effect of *Mimosa pudica* root powder on oestrous cycle and ovulation in cycling female albino rat, *Rattus norvegicus*, *Phytother. Res*, 16 (2), 190–192,(2002).
- M. Ganguly, N. Devi, R. Mahanta, M.K. Borthakur, Effect of *Mimosa pudica* root extract on vaginal estrous and serum hormones for screening of antifertility activity in albino mice, *Contraception*, 76 (6), 482–485,(2007).
- Tunna TS, Zaidul ISM, Ahmed QU, Ghafoor K, Al-Juhaimi FY, Uddin MS, Hasan M, Ferdous S, Analyses and profiling of extract and fractions of neglected weed *Mimosa pudica* Linn. traditionally used in Southeast Asia to treat diabetes. *South Afr J Bot* 99:144–52,(2015).
- Konsue, C. Picheansoonthon, C. Talubmook, Fasting blood glucose levels and hematological values in normal and streptozotocin-induced diabetic rats of *Mimosa pudica* L. extracts, *Pharmacogn. J*,9 (3),315–322,(2017).
- S. Parasuraman, T.H. Ching, C.H. Leong, U. Banik, Antidiabetic and antihyperlipidemic effects of methanolic extract of *Mimosa pudica* (Fabaceae) in diabetic rats Egypt, *J. Basic Appl. Sci*, 6 (1),137–148,(2019).

- S.T. Singarapriyavardhanan, P.S. Timiri Shanmugam, S.K. Koppala Narayana, A.A. Ammari, R.A. Amran, A.R. Alhimaidi, *Mimosa pudica* alleviates streptozotocin-induced diabetes, glycemic stress and glutathione depletion in Wistar Albino Rats, *J. King Saud Univ. Sci.* 34, 102037,(2022).
- Arokiyaraj S, Sripriya N, Bhagya R, Radhika B, Prameela L, Udayaprakash NK. Phytochemical screening, antibacterial and free radical scavenging effects of *Artemisia nilagirica*, *Mimosa pudica* and *Clerodendrum siphonanthus*. An in vitro study. *Asian Pacific J Trop Biomed* 2(2),S601–4,(2012).
- M.A. Almalki, *In-vitro* antioxidant properties of the leaf extract of *Mimosa pudica* Linn, *Indian J. Sci. Technol.* 9 (13),1–6,(2016).
- P. Parvathy, V.S. Murali, V.N. Meena Devi, M. Murugan, J. Jeni Jmaes, ICP-MS assisted heavy metal analysis, phytochemical, proximate and antioxidant activities of *Mimosa pudica* L, *Mater. Today Proc.* 45,2265–2269,(2021).
- S.T. Singarapriyavardhanan, P.S. Timiri Shanmugam, S.K. Koppala Narayana, A.A. Ammari, R.A. Amran, A.R. Alhimaidi, *Mimosa pudica* alleviates streptozotocin-induced diabetes, glycemic stress and glutathione depletion in Wistar Albino Rats, *J. King Saud Univ. Sci.* 34, 102037,(2022).
- Sangma TK, Meitei UD, Sanjenbam R, Khumbongmayum S, Diuretic property of aqueous extract of leaves of *Mimosa pudica* L. on experimental albino rats. *J Nat Prod* 3,172–8,(2010).
- Baghel A, Rathore DS, Gupta VE. valuation of diuretic activity of different extracts of *Mimosa pudica* Linn *Pakistan journal of biological sciences*,16(20):1223-1225,(2013).
- Bharati B Zaware, SR Chaudhari, and Manisha T Shinde. An Overview of *Mimosa pudica* linn. *Chemistry and Pharmacological Profile. Research Journal of Pharmaceutical, Biological and Chemical Sciences*,(2014).
- G.Vinothapooshan and K.Sundar: Anti-ulcer activity of *Mimosa pudica* leaves against gastric ulcer in rats. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*,1(4) 606,(2010).
- Elango V, Carolin Oliver Raghu PS. Antiulcer activity of the leaf ethanolic extract of *Mimosa pudica* in Rats. *Hygeia J D Med*,4,34-40,(2012).
- M. Karthikeyan, M.K. Deepa, Antinociceptive activity of *Mimosa pudica* Linn, *Iran. J. Pharmacol. Ther*,9, 1–14,(2009).
- P.K. Vikram, R. Malvi, D.K. Jain, Evaluation of analgesic and anti-inflammatory potential of *Mimosa pudica* Linn, *Int. J. Curr. Pharm. Res.* 4 (4), 47–50,(2012).
- U. Aziz, R. Akther, M. Shahriar, M.A. Bhuiyan, In vivo pharmacological investigation of *Mimosa pudica* L, *Int. J. Pharm. Pharm. Sci.* 6 (2), 66–69,(2014).