

Review article

Ethnomedicinal and pharmacological aspects of *mimosa pudica* plantDev Rawat¹, Harish Kumar¹, Anil Kumar², Vikram Kumar³, Sanjiv Kumar*¹¹Department of Pharmaceutical Sciences, Chaudhary Bansi Lal University, Bhiwani Haryana, India.²Guru Gobind Singh College of Pharmacy, Yamunanagar, Haryana, India.³Shri Baba Mastnath Institute of Pharmaceutical Sciences and Research, Rohtak, Haryana, India.**Corresponding author:** Dr. Sanjiv Kumar, ✉ sanjiv.pharmsci@gmail.com, **Orcid Id:** <https://orcid.org/0000-0003-0844-5090>

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Mimosa pudica L. is one of the most recognized plant belonging to the family *Fabaceae* or *Leguminosae*. Originally, the plant is native to South America and Central America but nowadays it has been introduced to other regions too. The plant is commonly known as touch-me-not or sensitive plant due to its nyctinastic movements. These movements have attracted researchers globally for further in-depth exploration of this plant. Ethnomedicinally, the plant is used for the treatment of leprosy, dysentery, vaginal and uterine complications, inflammations, burning sensation, asthma, leucoderma, fatigue and blood-related diseases. Phytochemical screening reported the existence of various phytochemicals such as alkaloids, sterols, glycosides, mucilages, flavonoids, tannins, non-protein amino acids, flavonoid C-glycosides, terpenoids and fatty acids etc. Among all compounds, Mimosine is found as the major alkaloid, which is might be responsible for its numerous pharmacological efficacies. Within this context, the present study is comprised of its botanical description, traditional uses, phytochemical analysis, pharmacological importance and clinical trials. Further research is still needed on its active components and associated structure-activity relationship and multifactorial signaling mechanisms. Moreover, enough placebo and toxicological research should also be conducted to justify its beneficial health effects.

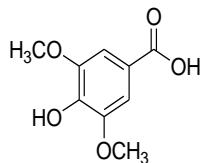
Keywords: *Mimosa Pudica*, Mimosine, Pharmacology, Clinical study, Traditional uses, Health effects.**INTRODUCTION**

Nature has been a source of medicinal agents and various health care products since antiquity. Various medicinal plants have been used for years in daily life to treat disease all over the world. Herbal medicine is based on the premise that plants contain natural active substances that can promote health and alleviate illness. The most important of these biologically active constituents of plants are alkaloids, flavonoids, terpenoids, tannins, saponins, anthocyanins, phenylpropanoids and phenolic compounds. These natural bioactives are predominantly used to treat diverse health ailments such as cardiovascular problems, liver disorders, and neuro disorders, microbial infections, digestive and metabolic disorders and also restrict the recurrence of associated pathogenesis^[1,2].

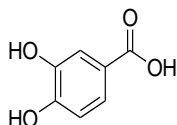
Mimosa pudica, belonging to the family *Fabaceae* is one of

the highly recognized plants due to its certain movements like nyctinastic, thigmonastic and seismonastic movements^[3,4]. Owing to these movements, the plant is commonly known as touch me not or sensitive plant. Apart from this uniqueness, the plant is reported to contain many bioactives such as alkaloids, sterols, glycoside, mucilage, flavonoid and tannins etc. Mimosine, the principal alkaloid of plant *M. Pudica*, is majorly responsible for rendering its diverse therapeutic properties. Its plenty of pharmacological activities includes anti-diabetic, antitoxin, antihepatotoxic, antioxidant, antimicrobial, anticancer, wound healing and many more^[5]. It is recommended to suppress Kapha and pitta, heals wounds, fatigue, asthma, leprosy, vaginal and uterine malfunctions. Besides, it is also useful in blood coagulation and to overcome sexual weakness^[6].

The various medicinal properties of this plant invite the attention of researchers worldwide. Within this context, the present review is focused on the traditional importance, phytochemical and various pharmacological attributes of this plant. Moreover, clinical approaches to this plant are also discussed. *Mimosa pudica* plants contained various active phyto constituents such as Syringic acid, Proto catechuic acid etc [31].



4-Hydroxy-3,5-dimethoxybenzoic acid
Syringic acid



3,4-Dihydroxybenzoic acid
Protocatechuic acid

METHODOLOGY

Comprehensive information was retrieved by surveying different worldwide accepted major databases like Google Scholar, Scopus, Science Direct, Wiley, PubMed, Elsevier and Web of Science. Relevant literature was also guttered from the thesis, recognized books and abstracts. Some articles were also tracked through sub-referencing the primary publications or citations by directly accessing the journal websites. For collecting enough data on the respective plant following keywords viz. *Mimosa pudica*, sensitive plant, traditional uses, ethno pharmacology, photochemistry

and pharmacology were used. The information on its botany, traditional uses, geographical distribution and common names was also obtained from local as well as published books along with Google chrome. The botanical name of the proposed plant was authenticated from The Plant List (<http://www.theplantlist.org/>). The literature search was mainly restricted to the English language. The articles were selected based on inclusion and exclusion criteria. The literature mainly concerning on the above-mentioned keywords was of primary acceptance while the articles obtained on some different aspects like stress mitigation and tolerance etc. were neglected.

Botanical description

The plant *M. pudica* grows up to a height of about 0.5 m and spreads up to 0.3 m. The stem is erect, slender, prickly and well-branched. Leaves are bipinnate fern-like and pale green in colour with a tendency of closing on disturbance. The quadri-pinnate, often reddish leaflets occur in 15 to 25 pairs, acute, bristly, usually 9 to 12 mm long and 1.5mm wide. Flowers are axillary in position and lilac-pink in colour usually occurring in globose heads. Calyxes are campanulate and petals are crenate towards the base. Usually, it flowers from August to October in Indian climate conditions. Fruits of mimosa are pods, 1.5 to 2.5 cm long, falcate and closely prickly on sutures [7]. The different plant parts of *M. pudica* are well depicted in Figure 1.

Figure 1: Different plant parts of *Mimosa pudica* L. (a) Whole plant, (b) flower and (c) leaves

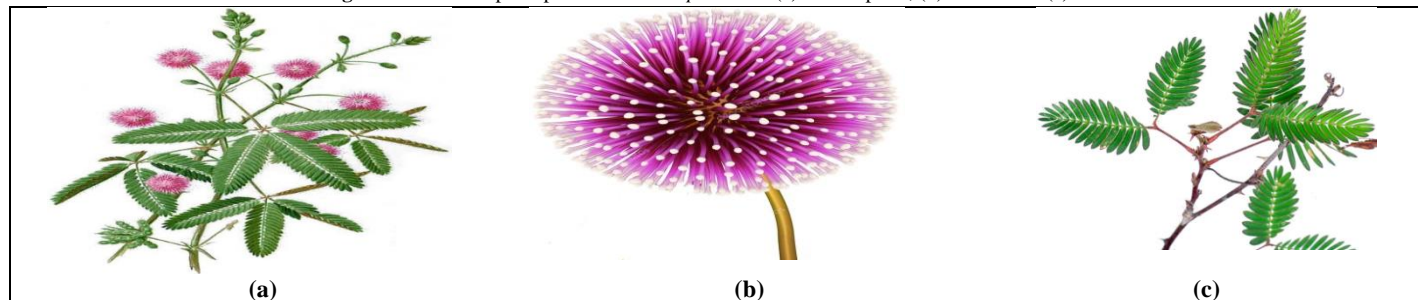


Table 1: Common Names of *M. Pudica*

Languages	Common names
Sanskrit	Namaskari
Ayurveda	Lajjalu
Hindi	Chuemue, Lajawanti
Tamil	Tottalsinungi
Bengali	Lojjaboti
Malayalam	Thottavadi
Kannada	Muttidare muni
Urdu	Chui –mui
Chinese	Limemeihr, Ra Kau Pikikaa

Philippines	Makahiya
West Indies	Mori vivi
Indonesia	Putri malu
Myanmar	Hti ka yoan
Latin	Pudica
Tonga	Mateloi
Malaysia	Pakoksemalu
European	Dormideira
Spanish	Mori –vivi
Central America	Dormilona

Taxonomic Classification

The plant *M. pudica* L. belonging to the family *Fabaceae* and is popularly called as ‘touch me not or sensitive plant’. Common Names of *M. Pudica* are given in Table 1. The taxonomic classification of *M. pudica* is given as follows:- Taxonomical classification of *M. pudica*

Kingdom: Plantae, Division: Magnoliophyta, Class: Magnoliopsida, Order: Fabales, Family: Mimosaceae, Genus: *Mimosa*, Species: *pudica* [7].

Global Distribution of *M. Pudica*

M. pudica is native to South America and Central America. It is regarded as an invasive species in Tanzania, South Asia, South East Asia and many Pacific Islands. In India, it is especially cultivated in southern states. The plant is declared as a weed in Northern territory. Nowadays, it has also been introduced to other regions such as Nigeria, Seychelles, Mauritius and East Asia butis. The geographical distribution of *M. pudica* is presented in Figure 2 [30].

Figure 2: Worldwide distribution of *M. pudica* L.

Traditional importance

All parts of *M. pudica* are considered to possess excellent medicinal properties and are traditionally used in the treatment of biliousness, leprosy, dysentery, vaginal and uterine complications, inflammations, burning sensations, and fatigue, asthma, and

leucoderma and blood diseases. The decoction of the root is used as a gargle to reduce toothache. It is very useful in diarrhea (ahtisaari), amoebic dysentery (raktaatisaara), bleeding piles and urinary infections. The various traditional uses of different plant parts of *M. pudica* are presented in Table 2.

Table 2: Folk medicinal uses of different parts of *M. pudica*

Plant part used	Disease type	References
Roots	Dysentery, small pox, fever, ulcer, jaundice, leucoderma, inflammations, asthma, haemorrhoids and fistula expedition of delivery rheumatism	[27] (Pande, and Pathak, 2010)
Leaves	Treatment of hydrocele, hemorrhages, fistula, conjunctivitis, haemorrhoids, wounds, bacterial infections, infection between fingers and also used as anticonvulsant agent	[28] (Das, 2011)
Whole plant	Treatment of cancer, rheumatism, edema, myalgia epilepsy, plague, edema, elephantiasis as well as also used as insect repellent	[29] (Hasan et al., 2012)
Leaves and seeds Decoction	Urinary tract infections and increased diuretic activity	

In Ayurveda, it is named Lajjalu that depicts the shy nature of this plant. In the Indian traditional system of medicine i.e. Ayurveda, the plant is used to combat wounds, uterine prolapsed and piles etc [6]. The various Sidha and Ayurvedic uses of *M. pudica* are well discussed in the under-mentioned sections: -

Sidha Medicinal Uses [8]

- The plant is beneficial in hemorrhagic diseases, diarrhea, and gynecological disorders.
- It is used in suppresses Kapha and pitta heals wounds, blood coagulation and treat sexual weakness.
- For diabetics, the juice of this plant is taken and given in a dose of 20–30 ml in the early morning.
- The leaves and roots are dried, powered and given at the dose of 2-5 gm to diabetic patients.
- The leaves are boiled with water and are used for relieving pain in the hip and kidney region.
- The juice of the plant is mixed in equal quantity with horse urine and externally applied for pterygium.
- A dose of 10 ml juice of *M. pudica* is given daily for 2-3 days for the treatment of bronchial asthma.
- The juice of this plant is boiled with ¼ of gingerly oil and is used to treat skin infections.
- The plant decoction is used to wash and treat ulcers and skin infections etc.

Ayurvedic and Unani Uses [3]

- The plant is used in treating diseases arising from corrupted blood and bile, bilious fever, piles, jaundice, leprosy, ulcers and smallpox etc.
- Ayurveda has declared that its root is bitter, acrid, cooling, vulnerary, alexipharmic, and is used in the treatment of leprosy, dysentery, vaginal and uterine complication, inflammations, burning sensation, asthma, leucoderma, and fatigue and blood diseases
- In the Unani healthcare system, its root is used as a resolvent or an alternative for the treatment of diseases arising from blood impurities, bile, bilious fevers, piles, jaundice, and leprosy etc.
- It is very useful in diarrhea (ahtisaari), amoebic dysentery (raktaatisaara), bleeding piles and urinary infections.
- Some herbal doctors recommend it for general weakness and impotency.
- It acts as an excellent mood enhancer.
- The plant possesses the capability of improving blood circulation.

Phytochemical analysis

Preliminary phytochemical analysis of *M. pudica* revealed the existence of a diversity of phytoconstituents including alkaloid, sterols, glycoside, mucilage, flavonoid, tannins, non- protein amino acid (mimosin), flavonoid C- glycosides, sterols, terpenoids and fatty

acids etc. Mimosine is reported as the principal alkaloid of plant *M. Pudica* [9]. The various phytoconstituents from different parts of *M.*

pudica are presented in Table 3.

Table 3: Chemical constituents of *M. Pudica*

Plant Part	Chemical Constituents
Leaves	Nor-epinephrine, <i>d</i> -pinitol, β -sitosterol, alkaloids such as mimosine, terpenoids, flavonoids, glycosides, quinines, phenols, tannins, saponins, coumarins and polyunsaturated fatty acids
Seed	Tubulin, <i>c</i> -glycosyl flavones, phenolic ketones and buffadienolide
Root	Flavonoids, phytosterols, alkaloids, amino acids, tannins, glycosides, fatty acids, ascorbic acid, crocetin, linoleic acid, palmitic acid and stearic acid
Stem	Linoleic acid, mimosine, gallic acid and bsitosterol
Whole Plant	Mimosinamine, mimosinic acid, tyrosin, jasmonic acid, abscisic acid, mimosine, <i>d</i> -xylose, dglucuronicacid, tubulin, gallic acid, ccosyl flavones, norepinephrine, thiamin., cassiaoccidental B and mimopudine

Pharmacological activities

Pharmacology is a branch of science dealing with the innovation, characterization, evaluation of drugs and their associated therapeutic mechanism in different biological systems. The various pharmacological attributes of different parts of *M. pudica* have been described in the following sections:

Analgesic Activity

Jain et al., (2012) examined the ethanolic extract of *M. pudica* leaves for its analgesic property via the hot plate method in acetic acid-induced writhing reflex models. The treating group was supplemented with the extract at different doses of 200, 400 and 500 mg/kg. The extract has shown its best analgesic potential at a dose of 500 mg/kg and has significantly reduced the acetic acid-induced writhing response. Flavonoid content of the leaves extract was found to be responsible for its analgesic potential [10].

Anti-Inflammatory Activity

Goli et al. (2011) screened the different solvents (petroleum ether, ethanol and aqueous extracts) of *M. pudica*. The study was carried out on carrageenan-induced paw edema and cotton pellet granuloma in male albino rats. The animals were orally supplemented with different doses of extracts including 50, 100 and 200 mg/kg of extracts whereas Indomethacin was used as the standard (used at a concentration of 10 mg/kg). Results revealed that extract possesses significant anti-inflammatory potential and can be recommended as a safe anti-inflammatory drug [11].

Wound Healing Activity

Volkov, (2008) studied the wound healing potential of an ointment containing 2% (w/w) the methanolic extract and 2% (w/w) the total aqueous extract of *M. pudica*. The results revealed that extracts exhibited significant ($P < 0.001$) wound healing activity. These two different extracts were also analyzed for total phenols content equivalent to Gallic acid. The content of total phenols was 11% (w/w) and 17% (w/w) in methanolic and total aqueous extract, respectively. As compared to aqueous extract, the methanolic extract exhibited good wound healing activity probably due to phenols constituents [12].

Anti-malarial Activity

Aarthi and Murugan, (2011) investigated the ethanolic extract of *M. pudica* leaves for its antimalarial activity. The study

was conducted on *Plasmodium berghei* induced infections in mice models. Results demonstrated the significant antiplasmodial activity of *M. pudica* leaves in all evaluated models of the antimalarial study. Phytochemical screening revealed the presence of some vital antiplasmodial constituents such as terpenoids, flavonoids and alkaloids in *M. pudica* leaves which might be responsible for rendering its antimalarial activity [13].

Anti-depressant Activity

Now-a-days, most people are suffering from depression and anxiety. Although several synthetic drugs are used as the standard treatment for clinically depressed and anxious patients but they are also associated with adverse effects that compromise their therapeutic efficacy. Therefore, these conditions have created an opportunity for alternative and plant-based treatment of anxiety and depression. In regard, *M. pudica* reported possessing both anxiolytic as well as anti-depressant properties. Kirk et al. (2003) evaluated the role of aqueous extracts of *M. pudica* dried leaves on behavioral actions. The extract was used at various concentrations of 2, 4, 6 and 8 mg/kg. The study was carried out via elevated plus-maze and DRL-72s test in rat models. The drug Diazepam at a concentration of 1.3 mg/kg was used as the standard drug. Significant results were obtained with good anti-anxiety and antidepressant activity of *M. pudica* leaves extract [14].

Anti-convulsant Activity

Bum et al. (2004) studied the anticonvulsant activity of *M. pudica* leaves decoction in pentylenetetrazol and strychnine induced seizures in mice models. The decoction was given intraperitoneally at a dose of 1000-4000 mg/kg. The decoction has significantly protected the mice against strychnine-induced seizures as compared picrotoxin-induced seizures. The decoction has also antagonized the N-methyl-D-aspartate induced turning behavior. Thus, it can be the decoction that can be suggested as a good anticonvulsant agent [15].

Anti-helminthic Activity

Vikram et al., (2012) studied the anthelmintic activity of various extracts like petroleum ether, ethanol and aqueous extracts of *M. pudica* seeds. The test worm used was *Pheretima posthuma*. The extracts were evaluated in different concentrations of 100, 200 and 500 mg/kg. Albendazole was used as a standard drug. The alcoholic

and aqueous extract treatment lead to paralysis and caused death of helminthic worm in a dose-dependent manner as compared to standard drug whereas petroleum ether showed weak anthelmintic activity [10].

Anti-diarrhoeal Activity

Diarrhea is the condition abnormal in temporary loss of water from body and also leads to more loose or liquid bowel movements per day. They evaluated the anti-diarrhoeal potential of the ethanolic leaves extracts of *M. pudica* in castor oil-induced diarrhea in Wistar albino rats. The ethanolic extract was supplemented at a dose of 200 and 400 mg/kg. The extract has significantly inhibited the castor oil-induced diarrhea and PGE2 induced enter pooling in rats and has also reduced the gastrointestinal motility after charcoal meal administration. They also reported that the anti-diarrhoeal property of *M. pudica* leaves may be attributed to its tannins and flavonoids content [16].

Anti-asthmatic Activity

Williams et al. (1995) examined the aqueous extract of *M. pudica* for its anti-asthmatic activity. The study was performed *in-vitro* as well as *in-vivo* in histamine-induced contraction in isolated goat tracheal chain. Results showed that *M. pudica* extract considerably inhibited the contractile effect of histamine ($P < 0.05$). A dose-dependent contraction of the goat tracheal chain was observed. As compared to the control group, extract treatment has protected up to 74% of mast cells from degranulation. The extract has shown excellent protection in guinea pigs against histamine-induced bronchospasm.

Thus, *M. pudica* can be considered as an excellent antihistaminic agent that also helps in mast cell stabilization, hence possesses a potential role in the treatment of asthma [17].

Anti-oxidant Activity

Muthukumaran et al., (2011) tested the antioxidant activity of methanolic crude extract of aerial parts of *M. pudica* via different antioxidant assays *viz.* Nitric oxide free radical scavenging assay, DPPH assay, ABTS assay and hydrogen peroxide scavenging assay. The ascorbic acid was used as standard. The extract has obtained an IC_{50} value of 296.92 μ g/ml while the IC_{50} value obtained with the standard was 131.29 μ g/ml. The extract has obtained different IC_{50} values with different assays such as inhibition of nitric oxide free radicals with an IC_{50} value of 78.1 \pm 1.75. The IC_{50} values obtained with DPPH free radical assay was 35.00 \pm 1.15 g/ml. In the case of ABTS and Hydrogen peroxide free radicals methods, the IC_{50} values were 81.00 \pm 3.85 and 449.60 \pm 2.55 g/ml, respectively. The antioxidant activity was also assessed for different parameters such as glutamate oxaloacetate transaminase, glutamate pyruvate transaminase, alkaline phosphate, bilirubin and total protein. Results showed that extract treatment has significantly elevated the level of these antioxidant

enzymes, thus can be used to protect the cell from oxidative stress [18].

Anti-microbial Activity

Tamilarasi and Ananthi, (2012) studied the antimicrobial activity of methanolic extract of *M. pudica* leaves. The extract was tested at various concentrations *of viz.* 50, 100, 200 μ g/ml against microorganisms like *Aspergillus fumigates*, *Citrobacter divergens* and *Klebsiella pneumonia*. The extract has shown excellent antimicrobial activity. It was observed that terpenoids, flavonoids glycosides, alkaloids, quinines, phenol, tannins, saponins and coumarins are the active substances found in the extract which may be responsible for the antimicrobial efficacy of *M. pudica* [19]. Gandhiraja et al. (2009) demonstrated the antifungal activity of methanolic and aqueous extract of *M. pudica* against different fungal pathogens such as *Aspergillus fumigates* via well diffusion assay [20].

Anti-ulcer Activity

Vinothapooshan and Sundar, (2010) studied the different solvents (ethanol, methanol, chloroform and diethyl ether) extract of *M. pudica*. The activity was investigated in aspirin, alcohol and pylorus ligation induced ulcer in albino rat models. The parameters evaluated were ulcer protection, gastric ulcer protection, reduction in a total volume of gastric juice, and gastric ulcer. The animals were orally treated with different dosages of 100 and 200 mg/kg of extract whereas 20 mg/kg of the dose of Ranitidine was used as standard drug. The extract at a dose level of 100 mg/kg shown maximum antiulcer activity. It was also noticed that the extract is safe up to 2000 mg/kg [21].

Anti-hyperglycemic Activity

Kirk et al., (2003) examined the chloroform leaves extract of *M. pudica* for demonstrating its antihyperglycemic activity. The study was conducted in Wistar albino rats. The chloroform extract exhibited considerable hyperglycemic activity. The bioactive constituents such as flavonoids, glycosides and alkaloids content of the extract are might be responsible for its antihyperglycemic activity [14].

Anti-venom Activity

Sia et al., (2011) studied the aqueous extracts of dried roots of *M. pudica* for its antivenom activity at two different concentrations of 0.14 and 0.16 mg. The study was carried out against *Najanaja* and *Bangaruscaerulus* venoms. The aqueous extract was tested for its inhibitory activity on lethality, phospholipase activity and hemorrhagic activity of *Najanaja* and *Bangaruscaerulus* venoms. The extracts were able to completely neutralize the lethal activity of the venoms. The extract has also inhibited the hyaluronidase and protease activities in a dose-dependent manner [22].

Anti-hepatotoxic Activity

Nazeema and Brindha, (2009) studied the antihepatotoxic activity of ethanolic extract of *M. pudica*. The extract was given at a

dose of 200 mg/kg body weight in CCl₄ induced hepatic damage in Wister albino rats. The activity was assessed in terms of different parameters such as glutamate oxaloacetate transaminase, glutamate pyruvate transaminase, alkaline phosphate, bilirubin and total protein. The extract has shown a good hepatoprotective effect in a dose-dependent manner [23].

Anti-fertility Activity

Kirk et al., (2003) studied the antifertility effect of air-dried methanolic root extracts of *M. pudica*. The study was conducted in Swiss albino rats and was administrated with a dose of 300 mg/ kg body weight/ day through oral route. The dose has significantly prolonged the estrous cycle. The root extract has also altered the estradiol secretion and gonadotropin release. The root powder when given intragastrically at a dose of 150 mg/kg of body weight in female *Rattus norvegicus* has considerably altered the estrous cycle pattern. A significant reduction in the number of ova was also observed [14].

Aphrodisiac Property

Pande and Pathak, (2009) investigated the effect of the ethanolic root extract of *M. pudica* on the libido of sexually normal Swiss albino male mice. The suspension of the extract was administered orally at different dosages of 100, 250 and 500 mg/kg, to different groups ($n = 6$) of male mice once a day for one week. The female albino mice involved in mating were made receptive by hormonal treatment. The general libido and potency were determined and compared with the standard reference drug sildenafil citrate. A change in hormonal parameters like testosterone was evaluated. Oral administration of the extract has significantly increased the libido and hormonal level of testosterone. The most appreciable effect of the extract was observed at a dose of 500 mg/kg. The results indicated that the ethanolic root extract has produced a significant and sustained increase in the aphrodisiac activity of normal male mice,

without any adverse effects [24].

Clinical trials

The aforementioned studies well establish the numerous ethnomedicinal and pharmacological efficacy of every part of *M. pudica*. Besides, these therapeutic studies, clinical studies are also required to scientifically justify the different pharmacological effects render by *M. pudica*. Some clinical trials conducted on *M. pudica* are discussed as follows:-

Clinical Study of Pilex Combination Therapy (PCT) Vs Conventional Ayurvedic Therapy in the Management of Haemorrhoids

Sahu and Pankaj, (2001) evaluated the effect of pilex combination (majorly contains *M. pudica* and *Yashad bhasma*) and ayurvedic therapy for the treatment of hemorrhoids. The study was conducted on eighty-eight male and female patients with an age group ranged from 15-75 years. The patients were divided into two groups where the group I was treated with conventional ayurvedic therapy. On the other hand, group II was treated with PCT. The prescribed doses were given for 4 weeks. However, the response of patients towards both the therapy was almost similar, but the percentage of complete response was greater in the PCT treated group than the conventional ayurvedic therapy treated group [25].

A Controlled Trial in 100 Cases with Nephro-Uretero-Lithiasis by Cystone - An Indigenous Drug and Other Advocated Methods

Misgar, (1989) evaluated the effect of the herbal formulation containing shilajit and hajrulyahoodbhasma (hajrulyahoodbhasma is composed of *Ocimum basilicum*, *Tribulus terrestris*, *M. pudica*, *Dolichosbi florus*, *Pavonia odorata*, *Equisetum arvense* and *Tectona grandis*). The study was conducted on 100 patients suffering from nephro-ureterolithiasis and was divided into four equal groups of 25 cases each for treatment and to evaluate the effectiveness of these four methods in the treatment of small renal calculi and ureteric calculi [26]. The significant results obtained with the proposed herbal formulation are depicted in Table 4.

Table 4: Summary of results obtained with Cystone against Nephro-Uretero-Lithiasis

Groups	Patients	Doses	Treatment	Duration of treatment	Stone passed	Patients operated
Group I	25	Cystone 2 table spoon 3 times/day	Plenty of fluids	2-6 months	19	6
Group II	25	Cystone 2 table spoon 3 times/day	Fluids and frusemide	2-6 months	20	5
Group III	25	Antispasmodic table spoon	Plenty of fluids	1 year	5	20
Group IV	25	Antispasmodic table spoon	Fluids and frusemide	1 year	7	18

CONCLUSION AND FUTURE PROSPECTIVE

From the current study, it can be concluded that *M. pudica* is a traditionally very important herb having many important pharmacological activities like analgesic, antidiarrhoeal, anti-inflammatory, anticonvulsant, antimicrobial, hepatoprotective activity, antiasthmatic, anti-ulcer, antioxidant property antidepressant and anxiolytic activity. Therefore, the herbal formulation based on this plant can be used effectively for the treatment of various health impairments with none or fewer side effects than the older synthetic agents. However, sufficient research was available on the numerous

therapeutic effects of its different plant part extracts but sadly, it was noticed that the plant active constituent i.e. mimosine is not explored up to the mark so that it can be introduced as a new lead for the innovation of novel natural and safe drug. Therefore, advanced research is needed on *M. pudica* active constituent's isolation and exploration as well as their beneficial therapeutic effects on the human body. Importantly, the present study provides a brief on the beneficial health effects of *M. pudica*, so that it can be further explored.

ABBREVIATIONS

<i>M. pudica</i>	:	<i>Mimosa pudica</i>
DPPH	:	2, 2-diphenyl-1-picrylhydrazyl
ABTS	:	2, 2'-Azino-bis (3-ethylbenzothiazolin 6-sulfonic acid
IC	:	Inhibitory concentration
PCT	:	Pilex combination therapy

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Declarations

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Conflict of interest

The authors declare no conflict of interest.

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