



A Review On Lajjalu (*Mimosa Pudica L.*) : A Valuable Medicinal Plant.

¹Dr. Sarita S. Gavade, ² Dr. Sarika Kandharkar, ³Dr. Aniket Joshi

¹Assistant Professor, ² Professor, ³Associate Professor

¹Dravyaguna Department,

¹Hon. Shri. Annasaheb Dange Ayurved Medical College and Post graduate Research Centre Ashta, Sangli

Abstract: *Mimosa pudica* is known by numerous common names like sensitive plant, sleepy plant, action plant, touch-me-not, shame. It is a creeping annual or perennial flowering plant of the pea/legume family *Fabaceae*. Plant heavily armed with recurved thorns and having sensitive soft grey green leaflets that fold and droop at night or when touched and cooled. It majorly possesses antibacterial, antivenom, antifertility, anticonvulsant, antidepressant, aphrodisiac, and various other pharmacological activities. The herb has been used traditionally for ages, in the treatment of urogenital disorders, piles, dysentery, sinus, and also applied on wounds.

In this article summarization of the various synonyms, morphological properties, pharmacological activities, uses, dose and formulations of the selected drugs from various classical; text up to the modern era is attempted. Also this indigenous drug has wholesome references in various ancient and modern texts. This plant proved beneficial in past; is drugs of choice nowadays and seems to be effective in future.

Keywords: Antidepressant, Aphrodisiac, Diuretic, *Mimosa pudica*, antitoxin, antihepatotoxin

INTRODUCTION:

Herbal medicine is based on the premise that plants contain natural substances that can promote health and alleviate illness. *Mimosa pudica* is a creeping annual or perennial flowering plant of the pea/legume family *Fabaceae*.¹ The well-known sensitive plant, (*Mimosa pudica*), also called humble plant. They are also named from the movements of the leaves in certain species that “mimic” animal sensibility.² The plant is a spiny subshrub and grows to a height of about 30 cm (1 foot). It has compound leaves and small globular pink or mauve flower puffs.² Its native to South America and also found in India.

The *Mimosa pudica* invites attention of the researchers worldwide for its pharmacological activities such as anti diabetic, antitoxin, antihepatotoxin, antioxidant and wound healing activities. It is reported to contain alkaloid, glycoside, flavonoid and tannis. In Ayurveda it is used in suppresses kapha and pitta dosha due to its bitter, astringent rasa and sheet guna. All parts of the tree are considered to possess medicinal properties. Used as diuretic, antispasmodic, emetic, vaginopathy, metropathy, ulcers, dysentery, inflammation, burning sensation, hemorrhoids, jaundice, asthma, fistula, spasmodic affections and fevers. The leaves are useful in hydrocele, fistula, scrotula, conjunctivitis, heals wounds, coagulates blood. The whole plant is used internally for vesical calculi and externally for odema, rheumatism, myalgia and tumor of the uterus.³

The review deals with its review from Ayurvedic samhita and modern literature related with vernacular names, synonyms, geographical distribution, morphology, Ayurvedic references with shloka's , pharmacological actions and its well known formulations

BIOLOGICAL NAMES: ⁴

Kingdom : *Plantae*
 Order : *Fabales*
 Family : *Fabaceae*
 Subfamily : *Caesalpinioideae*
 Genus : *Mimosa*
 Species : *Mimosa Pudica*

REGIONAL NAMES:^{4,11}

English	: Sensitive plant, Humble Plant
Hindi	: Lajjavanti, Lajvanti, Chhuimui,
Kannad	: Nacikegida, Muttidasenui, Machikegida, Lajjavati, Kashmiri
Malyallam	: Tottavati, Tottalvati, Tintarmani
Sanskrit	: Lajjalu, Samanga Var;kr;nt; , Namaskari
Tamil	: Tittalvati, Tottalcurunki
Assamese	: Lajubilata, Adamalati
Bengali	: Lajaka, Lajjavanti
Marathi	: Lajalu
Oriya	: Lajakuri
Punjabi	: Lajan
Telugu	: Mudugudamara
Urdu	: Chhuimui
Gujrati	: Risamani, Lajavanti, Lajamani

Synonyms :⁵

लज्जालु – लज्जते स्पर्शात् इत्येवंशीला |

समंडा – सम्यक् अंगति गच्छती रक्तपित्तान् विनाशयितुम् इति |

नमस्करी – नमः करोटीवांशीला नम्रत्वात् |

अंजलिकारिका – अंजली नमस्कारम् करोति इति |

Gana and Varga –

Charak Samhita – Sandhaniy, Purishsangrahaniya⁶

Sushrut Samhita – Priyangavadi, Ambavshthadi⁶

Vagbhat Samhita – Priyangavadi⁷

Rajnighantu – Parpatadi Varga⁸

Kaiyadev Nighantu- Oushadhi Varga⁹

Bhavaprakash Nighantu – Guduchyadi Varga¹⁰

Nighantu Adarsh – Babbuladi Varga⁶

GEOGRAPHICAL DISTRIBUTION⁶ :

This species originated in tropical Central and South America but is now found throughout the tropical regions of the world (i.e. pan-tropical). Widely naturalized in northern and eastern Australia (i.e. in the northern parts of the Northern Territory, in the coastal districts of Queensland and in some inland parts of New South Wales). Also naturalized on Christmas Island. A weed of wetter coastal areas, particularly in tropical and sub-tropical regions. It is mostly found in plantation crops, disturbed sites, pastures, waste areas, parks, lawns, gardens and along roadsides.

MORPHOLOGY¹¹ :**a) Macroscopic**

Root - Cylindrical, tapering, rependant, with secondary and tertiary branches, varying in length, upto 2 cm thick, surface more or less rough or longitudinally wrinkled; greyish brown to brown, cut surface of pieces pale yellow; fracture hard, woody, bark fibrous; odour, distinct; taste, slightly astringent.

Stem - Cylindrical, upto 2.5 cm in dia; sparsely prickly, covered with long, weak bristles longitudinally grooved, external surface light brown, internal cut surface grey, bark fibrous; easily separable from wood.

Leaf - Digitately compound with one or two pairs of sessile, hairy pinnae, alternate, petiolate, stipulate, linear lanceolate; leaflets 10-20 pairs, 0.6-1.2 cm long, 0.3-0.4 cm broad, sessile, obliquely narrow or linear oblong; obliquely rounded at base, acute, nearly glabrous; yellowish-green.

Flower - Pink, in globose head, peduncles prickly; calyx very small; corolla pink, lobes 4, ovate oblong; stamens 4, much exserted; ovary sessile; ovules numerous.

Fruit - Lomentum, simple, dry, 1-1.6 cm long, 0.4-0.5 cm broad with indehiscent segments and persistent sutures having 2-5 seeds with yellowish, spreading bristle at sutures, 0.3 cm long, glabrous, straw coloured.

Seed - Compressed, oval-elliptic, brown to grey, 0.3 long, 2.5 mm broad having a central ring on each face.

b) Microscopic

Root - Mature root shows cork 5-12 layered, tangentially elongated cells, a few outer layers crushed or exfoliated; secondary cortex consisting of 6-10 layered, tangentially elongated thin-walled cells; secondary phloem composed of sieves elements, fibres, crystal fibres and phloem parenchyma traversed by phloem rays, phloem fibres single or in groups, arranged in tangential bands; crystal fibres thick-walled, 3-25 chambered, each with single or 2-4 prismatic crystals of calcium oxalate; phloem rays uni to multiseriate, 2-3 seriate more common; secondary xylem consists of usual elements traversed by xylem rays; vessels scattered throughout secondary xylem having bordered pits and reticulate thickenings; crystal fibres containing one or rarely 2-4 prismatic crystals of calcium oxalate in each chamber; parenchyma, thick-walled, scattered throughout secondary xylem; xylem rays uni to bi-seriate, rarely multiseriate, wider towards secondary phloem and narrower towards centre; starch

grains, prismatic crystals of calcium oxalate and tannin present in secondary cortex, phloem and xylem rays and parenchyma; starch grains both simple and compound having 2-3 components, rounded to oval measuring 6-20 μ and 16-28 μ in dia. respectively.

Stem - Mature stem shows 4-8 layered, exfoliated cork of tangentially elongated cells filled with reddish-brown contents; secondary cortex wide, consisting of large, moderately thick-walled, tangentially elongated to oval, parenchymatous cells, filled with reddish-brown contents, a few cells containing prismatic crystals of calcium oxalate, a number of lignified, fibres single or in groups, scattered throughout; secondary phloem consisting of usual elements, 2-5 transversely arranged strips of fibres occur alternating with narrow strips of sieve elements and parenchyma, crystal fibres elongated, thick-walled, containing single crystal of calcium oxalate in each chamber; phloem rays thick-walled, radially elongated; secondary xylem composed of usual elements traversed by xylem rays; vessels drum-shaped with spiral thickenings, tracheids pitted with pointed ends, fibres of two types, shorter with wide lumen and longer with narrow lumen; xylem rays radially elongated, thick-walled, 1-6 cells wide and 3-30 cells high; pith consisting of polygonal, parenchymatous cells with intercellular spaces.

Leaf

Petiole - shows single layered epidermis with thick cuticle; cortex 4-7 layered of thin walled, parenchymatous cells; pericycle arranged in a ring; 4 central vascular bundles present with two smaller vascular bundles arranged laterally, one in each wing.

Midrib - shows single layered epidermis, covered with thin-cuticle; upper epidermis followed by a single layered palisade, spongy parenchyma single layered, pericycle same as in petiole; vascular bundle single.

Lamina - shows epidermis on both surfaces, palisade single layered; spongy parenchyma, 3-5 layers consisting of circular cells; rosette crystals and a few veins present in spongy parenchyma.

Fruit - Shows single layered epidermis with a few non-glandular, branched, shaggy hairs; mesocarp of 5-6 layers of thin-walled, parenchymatous cells; some amphicribal vascular bundles found scattered in this region; endocarp of thick-walled, lignified cells followed by single layered, thin-walled, parenchymatous cells

Seed - Shows single layered radially elongated cells; followed by 5-6 layered angular cells filled with dark brown contents; endosperm consists of angular or elongated cells, a few containing prismatic crystals of calcium oxalate; cotyledons consists of thin-walled cells, a few cells containing rosette crystals of calcium oxalate; embryo straight with short and thick radicle.

Powder - Reddish-brown; shows, reticulate, pitted vessels, prismatic and rosette crystals of calcium oxalate, fibres, crystal fibres, yellow or brown parenchymatous cells, palisade cells non glandular, branched, shaggy hairs, single and compound starch grains, measuring 6-25 μ in dia. with 2 - 3 components .

Ayurvedic References :-

"रक्तपादी शमीपत्रा स्पृक्का खदिरपत्रिका |

सङ्कोचनी समङ्गा च नमस्कारि प्रसारणी ||

लज्जालुः सप्तपर्णी स्यात् खदिरि गण्डमालिका ।

लज्जा च लज्जिका चैव स्पर्शलज्जाप्ररोधनी ||

रक्तमुला ताम्रमूला स्वगुप्ताङ्गलिकारिका ।

नाम्ना विंशतिरित्युक्ता लज्जायास्तु भिषग्वरैः ||

रक्तपादी कटुः शीता पित्ततीसारनाशिनी ।

शोफदाहश्रम श्वासव्रणकुष्ठा कफासनुत् || (रा.नि.)¹³

नमस्करी रक्तपादा समंगा अंजलिकारिका |

शमीपत्र रक्तमुला रूहा खदीरकरुणा ||

लज्जालुः स्यात् स्पृहा स्पृक्का गंधकरी प्रारोचनी |

नमस्करी हिमा तिक्ता कषाया कफपित्तहा |

योनिरोगमतीसारं रक्तपित्तं च नाशयेत् || (कै.नि.)¹⁴

रक्तपादी शमीपत्रा समंगा अंजलिकारिका |

नमस्करी गंधकरी स्पर्शसंकोचपर्णिका||

रक्तपादी कटुः शीता पित्ततीसारनाशिनी ।

शोफदाहश्रम श्वासव्रणकुष्ठा कफासनुत् || (ध.नि.)¹⁵

लज्जाल्लूहिं शमीपत्रा समङ्गा जलकारीका ।

रक्तपादी नमस्करी नाम्ना खदिरकेत्यपि |

लज्जालुः शीतला तिक्ता कषाया कफपित्तजित् |

रक्तपित्तमतीसारं योनिरोगान् विनाशयेत् || (भा.प्र.)¹⁶

प्रियङ्गवादीगणे अम्बुष्ठादीगणेच लज्जालुः पठ्यते|

लज्जालुः शीतला तिक्ता कषाया कफपित्तजित् |

रक्तपित्तमतीसारं योनिरोगात् विनाशयेत् ||

सं लज्जालु समडा अंजलिकारिका | (द्रव्यगुणविज्ञानम्)¹⁷

समङ्गा कथ्यते रक्तकेसरा जातिकारिका ।
 रक्तमूली रक्तपादी तथा लोहितपुष्पिका ॥
 नमस्करी गन्धकारी शमीपत्रा व भूशया ।
 भूशायिनी खदिरिका शब्दैः पर्यायवाचकैः ॥ (अ.म.)³

अतीसारहरा रक्तशमनी योनिदोषहा।
 कफपित्तहरा शीता समङ्गा तिक्तका रसे ॥ (म.नि.)³

“लज्जावतीमूलविलिप्तपाणिः बद्ध्वाऽथवा तत्र तदीयमूलम् ।
 गृह्णाति सर्पान् भ्रमतोऽतिघोरान् पुमान् सुपर्णप्रतिमप्रभावाः ॥ (राजमार्ताण्डः)³

"आर्देण लज्जालुकिनीभवेन मूलेन तैलं परिपाचितं यत् ।
 तत्स्वेदितः पाकविवर्जितो दाक् संरोहमागच्छति शस्त्रघातः । (राजमार्ताण्डः)³

“तण्डुलजलेन पिष्टं..... नाशयन्ति ।
 पानेन मण्डलिविषं यदि वा लज्जावतीमूलम् ॥ (सोढलः)³

Organoleptic Character : ⁵

Rasa – Kashay , Tikta
 Vipak – Katu
 Veerya - Sheet
 Doshghnata – Kapha, Pitta

Variety :⁸

Lajjalu : *Mimosa Pudica*
 Viparit Lajjalu : *Briophyllum sensitive*

Chemical constituents ¹⁸ – Alkaloids
 Flavonoids
 Phytosterol
 Amino Acid
 Tannins
 Phenol
 Cardiac glycosoides
 Saponins

IDENTITY, PURITY AND STRENGTH :¹¹

Foreign matter : Not more than 2 per cent
 Total Ash : Not more than 10 per cent
 Acid-insoluble ash : Not more than 5 per cent
 Alcohol-soluble extractive : Not less than 9 per cent
 Water-soluble extractive : Not less than 9 per cent

IMPORTANT FORMULATIONS- ¹¹

Samagandi Churna, Kutjavaleha, Pushyanuga , Bruhat Gangadhara Churna.

DOSE - 10-20 g of the drug for decoction. ¹¹

PHARMACOLOGICAL ACTION:

Wound Healing Activity :

The methanolic extract of *Mimosa pudica* exhibited good wound healing activity probably due to phenols constituents.¹⁹

Anticonvulsant Activity :

From the study that the ethanolic extract *Mimosa pudica* root (EMPR) exhibited significant antiepileptic activity in both MES and PTZ induced seizure models.²⁰

Antimicrobial Activity :

In these active phytoconstituents of *Mimosa pudica* was studied and further the antimicrobial activity of the plant extract was also tested against three potentially pathogenic microorganisms *Aspergillus fumigatus*, *Citrobacter diversens* and *Klebsiella pneumonia* at different concentrations of the extract to understand the most effective activity. The maximum zone of inhibition was obtained for *Aspergillus fumigatus* and *Klebsiella pneumonia* at a concentration of 200µg/200µl. While *Klebsiella*

pneumonia exhibited good sensitivity against both the concentrations, *Citrobacter divergens* showed resistance against *Mimosa pudica* extract at all concentrations.²¹

Antidepressant Activity :

Phytochemical investigations done in a study showed the presence of alkaloids, flavonoids and tannins in the extract. It is likely that the antidepressant activity seen with *Mimosa pudica* could be because of the present phyto-constituent.²²

Antifertility Activity :

The present study indicates the active role of the aqueous, alcoholic and petroleum ether extract of the leaves of *Mimosa pudica* Linn in the inhibition of implantation in rats.²³

Diuretic Activity :

Diuretics are the drugs which increase the urine output. This property is useful in various pathological conditions of fluid overload. The presently available diuretics have lot of adverse effects. These study is study has evaluated the diuretic activity of ethanolic root extract of *Mimosa pudica* as an alternative/new drug which may induce diuresis.²⁴

Antivenom Activity :

The antivenom potential of *M. pudica* plant extract was tested against cobra and krait venom by *in vivo* and *in vitro* methods. The neutralization of lethality was done by mixing constant amount of venom (2LD₅₀) with various dilutions of *M. pudica* plant extracts and incubated at 37°C for 30 min prior to injection. We found that 0.14 mg and 0.16 mg of *M. pudica* plant extracts were able to completely neutralize the lethal activity of 2LD₅₀ of *Naja naja* and *Bangarus caeruleus* venom respectively.²⁵

Aphrodisiac Activity :

The most appreciable effect of the extract was observed at the dose of 500 mg/kg. The results indicated that the ethanolic extract of roots of *Mimosa pudica* Linn. (Mimosae) produced a significant and sustained increase in the aphrodisiac activity of normal male mice, without any adverse effects.²⁶

Hepatoprotective Activity :

This study was undertaken to demonstrate the hepatoprotective activity of *Mimosa pudica* on the experimentally induced jaundice affected albino rats. The oral administration of the crude powder of *Mimosa pudica* for 10 days resulted in the control of these hepatic parameters and thereby protecting the liver. This hepatoprotective effect of *Mimosa pudica* may be due to the activity of its constituents like alkaloid, tannins, glycosides, terpenoids, flavonoids and saponins.²⁷

Hyperglycemic Activity :

Ethanolic extract of *Mimosa pudica* leaves given by oral route to mice at a dose of 250 mg/kg showed a significant hyperglycemic effect.²⁸

Antifungal Activity :

In the present investigation the antimicrobial activity of *Mimosa pudica* plant extract was tested against five potentially pathogenic microorganisms: *Trichophyton verrocusson*, *Trichophyton mentagrophyte*, *Microsporum nanum*, *Aspergillus niger* and *Aspergillus flavus* at different concentrations (10, 20 and 40 mg/ml) of the extract to determine the most effective activity. The maximum percentage inhibition was obtained for *Trichophyton verrocusson*, *T. mentagrophyte*, *Microsporum nanum* and *Aspergillus flavus* at a concentration of 40 mg/ml. While *A. niger* showed resistance against *Mimosa pudica* extract at all concentrations.²⁹

Conclusion:

Mimosa pudica is well known plant which has a number of traditional uses for ameliorating multiple diseases, which were further supported by several pharmacological and clinical studies detailing the specific bioactivity of extracts of the plant. The traditional text gives us the knowledge about its various properties and formulation being used in various conditions. Numerous investigations on *M. pudica* have now established that it is an important medicinal plant having a plethora of chemical constituents effective against a large number of ailments. Summarized studies which shows anti diabetic, antitoxin, antihepatotoxin, antioxidant, antibacterial, antivenom, antifertility, anticonvulsant, antidepressant, aphrodisiac and wound healing activities. However, the diverse pharmacological activities of the plant extract and isolated phytochemicals have only been assayed in laboratory, and very few clinical studies were available. So it is necessary to take clinical trials according to its studies carried out and the exploit the full medicinal potential of *Mimosa pudica*.

References :

1. https://en.wikipedia.org/wiki/Mimosa_pudica.
2. <https://www.britannica.com/plant/sensitive-plant>
3. By Arya Vaidya Sala ; Indian Medicinal Plants Vol 4 ; Published by Orient Longman ;Reprint 2006 ;Page No. 36.
4. <https://www.cabi.org/isc/datasheet/34202>
5. By Shri Bapalal Vaidya written "Nighantu Adarsha" Vol. 2 ; Published by Chaukhambha Bharati Academy; Reprint 2018; Page No. 524.
6. By Proffesor Priyavarat V Sharma Written 'Dravyaguna –Vijnana' Vol. -2; Published by Chaukhambha Bharati Academy, Varanasi; Reprint 2005; Sandhaniya; Page No. 749.
7. By Kaviraj Atridev Gupta "Vidyotini" Commentary on "Ashtangahridayam of Shri Vagbhat"; published by Chaukhambha Sanskrit Sansthan Varanasi; Page No. 107.
8. Dr. Satish Chandra Sankhyadhar and Dr. Deepika Sankhyadhar translated "Rajnighantu of Shri Narahari Pandit" ; Published by Chaukhamba Orientalia, Varanasi; Reprint 2017; Page No. 179 .

9. By Acharya Priyavrat Sharama and Dr. Guruprasad Sharma edited “ Kaiyadev Nighantu”; published by Chaukhambha Orientaliam, Varanasi; Reprint 1979.
10. By Professor Shri Krushnachandra Chunekar Written “Bhavaprakash Nighantu”; published Chaukhambha Bharati Academy, Varanasi; Reprint 2018; Page No. 442.
11. Government Of India Ministry Of Health And Family Welfare Department Of Ayush ; THE AYURVEDIC PHARMACOPOEIA OF INDIA; PART- I ;VOLUME – II Page NO 105- 108.
12. https://keyserver.lucidcentral.org/weeds/data/media/Html/mimosa_pudica.htm
13. Dr. Satish Chandra Sankhyadhar and Dr. Deepika Sankhyadhar translated “Rajnighantu of Shri Narahari Pandit” ; Published by Chaukhamba Orientalia, Varanasi; Reprint 2017; Page No. 179 Shlok No 103- 106.
14. By Acharya Priyavrat Sharama and Dr. Guruprasad Sharma edited “ Kaiyadev Nighantu”; published by Chaukhambha Orientaliam, Varanasi; Reprint 1979, Shlok No. 1081- 1082.
15. By Acharya Priyavrat Sharama and Dr. Guruprasad Sharma edited “Dhanvantari Nighantu”; Published by Chaukhambha Orientalia, Varanasi; Reprint 2002, Shlok No. 97-98.
16. By Professor Shri Krushnachandra Chunekar Written “Bhavaprakash Nighantu”; published Chaukhambha Bharati Academy, Varanasi; Reprint 2018; Page No. 442, Shlok No. 272-273.
17. . By Acharya Trikammatmajen Yadavsharman written “Dravyagunavidyanam” Uttarardha; published by Shri Sharma Ayurved Mandir: Print 1986.
18. Article by 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. ; IJPSR (2014), Vol. 5, Issue 12; published 01 December, 2014
19. Article by Dnyaneshwar D.KokaneRahul Y.MoreMandar B.KaleMinakshi N.NehetePrachi C.Mehendale Chhaya H.Gadgoli ; Evaluation of wound healing activity of root of *Mimosa pudica* ; Journal of Ethnopharmacology; Volume 124, Issue 2, 15 July 2009, Pages 311-31.
20. Article by Rathima C., Shashikumara, Thippeswamy T., Jayanthi M. K ; Evaluation Of Anticonvulsant Activity Of *Mimosa Pudica* Root Linn In Swiss Albino Mice; Int J Pharm Pharm Sci, Vol 8, Issue 9, 49-52.
21. Article by N. Gandhiraja, S. Sriram,* V. Meena, J. Kavitha Srilakshmi, C. Sasikumar and R.Rajeswari ; Phytochemical Screening and Antimicrobial Activity of the Plant Extracts of *Mimosa pudica* L. Against Selected Microbes.; Ethnobotanical Leaflets 13:618-24, 2009, Issued May 01, 2009.
22. Article by Sanat Udyavar; Evaluation of Antidepressant activity of ethanolic extract of *Mimosa pudica* in swiss albino mice ; IJPPTK; print ISSN 2393- 9089 , Online ISSN 2393-9087, Article Page 240-244.
23. Article by Y. Jamuna Devi ; Antifertility Activity of Different Extracts of *Mimosa Pudica* Linn Leaves in Female Rats ; ISSN (Online): 2319-7064 ; Volume 6 Issue 3, March 2017 .; Article Page 826-830.
24. Article by Kalabharathi Hl, Shruthi Sl, Vaibhavi Ps, Pushpa Vh, Satish Am, Mohammad Sibgatullah ; “Diuretic Activity of Ethanolic Root Extract of *Mimosa Pudica* in Albino Rats.”; PMID: 26870704 ; PMCID: PMC4717732 ; DOI: 10.7860/JCDR/2015/14662.6877.
25. Article by Subramani Meenatchisundaram, Selvin Priyagrace , Ramasamy Vijayaraghavan, Ambikapathi Velmurugan, Govindarajan Parameswari, Antonysamy Michael; “Antitoxin activity of *Mimosa pudica* root extracts against *Naja naja* and *Bangarus caeruleus* venoms”; Bangladesh J Pharmacol. 2009; 4: Page No. 105-109; DOI:10.3329/bjp.v4i2.2276.
26. Article by Milind Pandye and Anupam Pathak; "Aphrodisiac Activity of Roots of *Mimosa pudica* Linn. Ethanolic Extract in Mice";International Journal of Pharmaceutical Sciences and Nanotechnology (IJPSN) Vol 2 No 1 (2009): April-June 2009 Issue Published : May 31, 2009.
27. Article by R. Kumaresan, Sneha Veerakumar, V. Elango; “A Study on Hepatoprotective Activity of *Mimosa pudica* in Albino Rats.” ; International Journal of Pharmacognosy and Phytochemical Research 2015;ISSN:0975_4873; 7(2); 337-339.
28. Article by T Amalraj, S Ignacimuthu ; “Hyperglycemic effect of leaves of *Mimosa pudica* Linn.”; PMID: 12234583; DOI: 10.1016/s0367-326x(02)00079-5.
29. Article by I Ibrahim D, I Muhhammad, A.I. Kanoma, Kasimu Shehu ; “Antifungal screening of *Mimosa Pudica* Plant Extracts against Phytopathogenic Fungi.” ;Open Science Journal of Bioscience and Bioengineering Vol. 1, No. 1, 2014;1(1);1-12; Published online June 30- 2014, pp. 1-12 2014.