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Mimosa Pudica Linn: A Comprehensive Review on Botanical Description, Phytochemistry, Pharmacological Activities and Therapeutic Applications.

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ABSTRACT-

Mimosa Pudica Linn., Commonly Known As The "Touch-Me-Not" Plant, belongs to the Fabaceae family and is a well-known medicinal herb. It has been thoroughly investigated for its many pharmacological characteristics and displays a distinctive thigmonastic movement. The botanical description, phytochemical composition, pharmacological activities, and therapeutic potential of Mimosa pudica are the main topics of this review. Alkaloids, flavonoids, tannins, terpenoids, glycosides, and mimosine—compounds accountable for its diverse range of biological effects—are found in phytochemical investigations. Significant antimicrobial, antioxidant, anti-inflammatory, antidiabetic, hepatoprotective, and wound-healing properties have been shown in experimental studies. This plant has long been used in traditional medical systems like Ayurveda and Siddha to treat wounds, piles, urinary infections, and liver disorders. The overall results point to Mimosa pudica's enormous therapeutic potential, which may be further investigated for contemporary drug development.

Keywords: *Mimosa Pudica*, Phytochemistry, Pharmacological Activity, Therapeutic Applications, Medicinal Plants.

Fig.1 [42]

Introduction-

Ancient Times, Nature Has Served As A Valuable Source Of Medicinal Agents And Healthcare Remedies. Plants Have Been Used Traditionally Across The World For The Prevention And Treatment Of Various Diseases. The Principle Of Herbal Medicine Relies On The Fact That Plants Contain Naturally Occurring Bioactive Compounds Which Support Health And Aid In The Management Of Illnesses. Among These Phytoconstituents, Flavonoids, Terpenoids, Tannins, Saponins, Anthocyanins, Phenolic Compounds And Phenylpropanoids Play A Major Therapeutic Role. These Biologically Active Components Exhibit A Wide Range Of Pharmacological Effects Including Cardioprotective, Hepatoprotective, Neuroprotective, Antimicrobial, Digestive And Metabolic Regulatory Actions, And Also Help In Reducing The Progression Or Recurrence Of Several Disease Conditions. [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].

Mimosa Pudica Has Been Widely Utilized In Traditional Medicinal Systems Such As Ayurveda And Unani For The Management Of Various Ailments. It Is Commonly Employed In The Treatment Of Gastrointestinal Disorders Like Diarrhea And Dysentery, Skin-Related Conditions Including Ulcers And Infections, And Respiratory Problems Such As Asthma And Bronchitis. Additionally, It Has Been Used In Conditions Like Insomnia, Epilepsy, General Debility, And Female Reproductive System Disorders Including Vaginal And Uterine Infections. The Therapeutic Potential Of The Plant Is Mainly

Attributed To Its Bioactive Constituents Such As Alkaloids, Flavonoids, Tannins, And The Unique Compound Mimosine, Which Contribute To Its Medicinal Properties.

However, Despite Its Medicinal Value, Mimosa Pudica Is Considered An Invasive Weed In Many Tropical Regions. It Spreads Rapidly And Tends To Dominate Agricultural Fields Of Crops Such As Maize, Beans, Soybean, Rice, Cotton, Banana, Sugarcane, Coffee, And Rubber By Forming Dense Mats That Suppress The Growth Of Other Plants. Its Thorny Stems Make Manual Removal Difficult, And When Dried, It Can Also Contribute To Wildfire Hazards. Thus, Mimosa Pudica Represents A Plant With Dual Significance—A Potent Medicinal Herb, Yet A Persistent Agricultural Weed. [5]

Mimosa Pudica Has Also Been Traditionally Used As An Antidote For Snake Bites And Scorpion Stings, Owing To Its Potent Anti-Venom And Anti-Inflammatory Properties. The Plant Is Widely Recognized In Herbal Medicine For Its Therapeutic Potential And Is Considered To Be One Of The Significant Medicinal Herbs Of Natural Origin. Although Well-Known For Its Traditional Applications, Mimosa Pudica Remains A Subject Of Scientific Interest And Ongoing Research Due To Its Diverse Pharmacological Activities And Scope For Future Drug Development.

Botanical Description-

Biological Source-

Mimosa Pudica Linn. Belongs To The Family Fabaceae (Leguminosae) And Subfamily Mimosoideae.

The Biological Source Of *Mimosa Pudica* Consists Of The Whole Plant, Including Leaves, Stem, And Roots.

Botanical Name: *Mimosa Pudica* Linn.

Common Names: Sensitive Plant, Touch-Me-Not Plant, Lajwanti, Chuimui.

Botanical Description-

Mimosa Pudica Is A Small, Prickly, Diffused Herb Or Under-Shrub That Grows Up To 45–90 Cm In Height.

- Stem: Slender, Woody At The Base, Branched, And Covered With Small Prickles.
- Leaves: Bipinnately Compound, With 15–25 Pairs Of Small, Oblong Leaflets That Fold Inward When Touched (*Thigmonastic Movement*).
- Flowers: Small, Pink To Purplish, Arranged In Globose Heads On Short Prickly Peduncles.
- Fruits: Flat, Bristly Pods (Legumes), Straw-Colored, Containing 3–5 One-Seeded Segments.
- Roots: Taproot System, Cylindrical, And Slightly Bitter In Taste.
- **Taxonomy:- [7)**
- 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

Distribution-

Native To South America, Now Widely Naturalized Throughout India, Sri Lanka, Africa, And Tropical Asia, Growing Commonly In Moist And Shady Places.

Useful Part-

Entire Plant (Root, Stem, And Leaves) — Used For Its Antimicrobial, Anti-Inflammatory, And Wound-Healing Properties.

Vernacular Names-

Language / Region	
English	Sensitive Plant, Touch-Me-Not Plant
Hindi	Lajwanti, Chuimui, Chhui-Mui
Marathi	Lajalu, Lajjalu
Sanskrit	Lajjalu, Namaskari, Samangika
Tamil	Thottasinjivi
Telugu	Attapatti
Kannada	Mutidare Munja-Bale
Bengali	Lajjaboti
Gujarati	Lajwanti

Origin-

Mimosa Pudica Is Native To Tropical South America And Central America, Particularly Brazil.

It Was Later Introduced And Naturalized In Many Tropical And Subtropical Regions Of The World, Including India, Sri Lanka, Africa, Southeast Asia, And The Pacific Islands.

Habitat-

Mimosa Pudica Grows Naturally In Tropical And Subtropical Regions Around The World.

It Prefers Moist, Well-Drained Soils And Is Commonly Found In:

- Roadsides, Gardens, Lawns, And Open Fields
- Shady And Damp Areas
- Waste Lands And Along Forest Edges

It Thrives Well In Warm Climates With Moderate Rainfall And Full To Partial Sunlight.

In India, It Is Widely Distributed Throughout The Plains And Hill Regions, Especially In South India And Western Ghats.

Microscopy-

Root-

Secondary And Tertiary Roots Are Cylindrical And Tapered.

Branches That Range In Length Up To 2 Cm In Thickness, Have A Surface That Is Roughly Rough Or Longitudinally Wrinkled, Are Grayish-Brown To Brown In Colour, Have A Pale Yellow Cut Surface, Are Woody, Fracture Hard, And Have A Peculiar, Slightly Astringent Taste.

Stem –

Is Cylindrical And Up To 2.5 Cm In Diameter. It Is Sparsely Prickly, Covered In Long, Weak Bristles, Has Longitudinal Grooves, A Light Brown

Exterior, A Grey Interior, And Fibrous Bark That Is Easily Separated From Wood. Leaf.

Digitally Compound With One Or Two Pairs Of Hairy, Sessile Pinnae That Alternate, Petiolate, Stipulate, And Linear Lanceolate; Leaves 10–20 Pairs, 0.6–1.2 Cm Long, 0.3-0.4Cm Broad, Sessile, Obliquely Narrow Or Linear Oblong; Base Obliquely Rounded, Acute, Almost Glabrous, Yellowish Green.

Flower-

Is Pink With A Globose Head With Thorny Peduncles; The Calyx Is Very Small; The Corolla Is Pink With Four Oval, Oblong Lobes; The Stamens Are Four And Heavily Exerted; The Ovary Is Sessile; And There Are Many Ovules.

Seed-

Brown To Grey, Compressed, Oval-Elliptic, 0–0.3 Cm Long, 2.5 Mm Wide, With A Centre Ring On Each Surface.[8]

Leaf (Petiole)-

- Petiole Shows A Single-Layered Epidermis Covered With A Thin Cuticle.
- Cortex Consists Of Four To Seven Layers Of Thin-Walled Parenchymatous Cells.
- Pericycle Is Arranged In A Ring.Vascular Bundles: Four Central Vascular Bundles Are Present, With Two Smaller Lateral Bundles (One In Each Wing).

Midrib

- Shows A Single-Layered Epidermis Covered With Thin Cuticle.
- Below The Upper Epidermis, A Single Layer Of Palisade Cells Is Present.
- Spongy Parenchyma Is Single-Layered.
- Pericycle Same As In Petiole.
- Vascular Bundle: Single And Centrally Located.

Lamina-

- Shows Epidermis On Both Upper And Lower Surfaces.
- Palisade Layer: Single-Layered.
- Spongy Parenchyma: Three To Five Layers Of Circular Parenchymatous Cells.
- Rosette Crystals And Few Small Veins Are Present Within The Spongy Parenchyma.

Fruit-

- Fruit Shows A Single-Layered Epidermis With A Few Non-Glandular, Branched, Shaggy Hairs.
- Mesocarp: Five To Six Layers Of Thin-Walled Parenchymatous Cells.
- Vascular Bundles: Some Amphicribral Vascular Bundles Are Scattered In This Region.
- Endocarp: Made Up Of Thick-Walled Lignified Cells, Followed By A Single Layer Of Thin-Walled Parenchymatous Cells.

Powder-

Reddish Brown Powder With Reticulate, Pitted Vessels, Prismatic And Rosette Calcium Oxalate Crystals, Fibres, Crystal Fibres, Yellow Or Brown Parenchymatous Cells, Palisade Cells, Nonglandular, Branched, Shaggy Hair, And Single And Compound Starch Grains With A Diameter Of 6–25 Mm And Two–Three Components[9]

Formulations-

1. Samangaadi Churna
2. Kutajavaleha
3. Pusyanug Churna
4. Bhret
5. Gangadhara Churna.[49]

Dose-

10–20 G Of Drug For Decoction.[50]

Phytochemical Constituents:-

M. Pudica's Complex Secondary Metabolite Profile Is Directly Linked To Its Numerous Medicinal Uses. The Plant Is A Reliable Source Of Bioactive Chemicals, And The Concentration Of These Compounds Varies Significantly According On The Plant Part, Season, And Geographic Region.

Chemical Class	Specific Compound(s)	Primary Plant Part(s)
Alkaloids / Non-protein Amino Acids	Mimosine	Leaves, Seeds
Flavonoids (C-Glycosides)	Vitexin, Isovitexin	Leaves
	Orientin, Isoorientin	Leaves
Other Phenolics	Gallic acid, Protocatechuic acid	Leaves, Stems
Tannins	Condensed tannins (Proanthocyanidins)	Whole plant, Bark
Terpenoids & Sterols	β-Sitosterol, Stigmasterol	Whole plant, Root
	Campesterol	Whole plant
Fatty Acids	Palmitic acid, Linoleic acid, Oleic acid	Seeds (Oil)

Alkaloids And Mimosine –

Mimosine, A Non-Protein Amino Acid That Is Also Categorised As An Alkaloid, Is The Most Extensively Researched And Distinctive Component Of M. Pudica [10]

Similar In Structure To Tyrosine, Mimosine Is Well-Known For Its Antimitotic Qualities, Which It Attains Via Chelating Metal Ions Necessary For Enzymes Such As Dna Polymerase [11]

By Selectively Stopping The Cell Cycle In The Late G1 Phase, This Antimitotic Activity Stops Dna Replication. The Toxicity Of The Plant Is Caused By This Characteristic, Which Is Being Investigated For Anticancer Research. Mimosine Is A Significant Toxin That Can Cause Alopecia (Hair Loss), Goitrogenic Effects, And Stunted Growth In Non-Ruminants, Although It Can Be Broken Down By Rumen Bacteria In Ruminants [12].

Flavonoids And Phenolics –

The M. Pudica's Strong Antioxidant Activity Is Mostly Due To Its Abundance Of Flavonoids And Phenolic Chemicals. [13]. Many C-Glycosylflavones Have Been Identified, Especially From The Leaves [14]. Important C-Glycosylflavonoids Vitexin, Isovitexin, Orientin, And Isoorientin Are Examples Of Derivatives Of Apigenin And Luteolin. The Direct Link Between C And C Between These Compounds' Sugar And Aglycone (Flavonoid Nucleus) Provides Substantial Stability Against Both Enzymatic And Acidic Hydrolysis In Contrast To The More Prevalent O-Glycosides. Their Bioavailability And Durability May Be Improved By This Increased Stability.

In Vivo, Supporting The Plant's Long-Lasting Hepatoprotective And Anti-Inflammatory Properties [15].

Terpenoids And Tannins-

The Plant's Traditional Usage As An Astringent And To Treat Diarrhoea, Dysentery, And Bleeding Is Explained By The Presence Of Tannins, Including Both Condensed (Proanthocyanidins) And Hydrolysable Forms [16]. The Astringent Characteristic Is Caused By The Precipitation Of Mucosal And Salivary Proteins. Because Tannins May Form A Protective, "Leathery" Covering Over Wounds And Combine With Microbial Enzymes To Impede Their Action, This Protein-Binding Ability Is Also Essential To Their Antibacterial And Wound-Healing Properties [17].

Pharmacological Activities-

Analgesic Activity-

Using The Hot Plate Method In Acetic Acid-Induced Writhing Reflex Models, Jain Et Al. (2012) Investigated The Analgesic Properties Of The Ethanolic Extract Of M. Pudica Leaves. The Extract Was Added To The Treatment Group At Doses Of 200, 400, And 500 Mg/Kg. At A Dose Of 500 Mg/Kg, The Extract Demonstrated Its Maximum Analgesic Effect And Considerably Decreased The Writhing Reaction Brought On By Acetic Acid. The Analgesic Activity Of The Leaf Extract Was Discovered To Be Caused By Its Flavonoid Content [18].

Anti- Inflammatory Activity-

The Various Solvents (Petroleum Ether, Ethanol, And Aqueous Extracts) Of M. Pudica Were Screened By Goli Et Al. (2011). The Research Was

Conducted On Male Albino Rats With Cotton Pellet Granuloma And Paw Oedema Caused By Carrageenan. The Animals Received Oral Supplements Of Various Extract Dosages, Such As 50, 100, And 200 Mg/Kg, While The Standard Was 10 Mg/Kg Of Indomethacin. The Extract Has A Strong Anti-Inflammatory Potential And Can Be Suggested As A Safe Anti-Inflammatory Medication, According To The Results [19]

Antihelmintic Activity-

The Anthelmintic Properties Of Many Extracts, Including Petroleum Ether, Ethanol, And Aqueous Extracts Of M. Pudica Seeds, Were Investigated By Vikram Et Al. (2012). Pheretima Posthuma Was The Test Worm Utilised. The Extracts Were Assessed At 100, 200, And 500 Mg/Kg Concentrations. The Standard Medication Used Was Albendazole. Doi: 10.55522/Jmpas.V13i1.5478 For The Alcoholic Journal Of Medical Pharmaceutical And Allied Sciences, Volume 13, Issue 1, 5478, January–February 2024, Pages 6309–6316 6313, Issn No. 2320-7418

And Aqueous Extract Administration Resulted In Dose-Dependent Helminthic Worm Paralysis And Death, While Petroleum Ether Exhibited Mild Anthelmintic Effects. [20]

Wound healing activity-

Pharmacological Research Supports The Use Of M. Pudica Healing Cuts And Wounds. An Extract Of The Roots In Methanol.

In Rat Excision Wound Models, The 2% (W/W) Ointment Showed A Notable Increase In Wound Healing. In Comparison To Control Groups, This Was Demonstrated By A Larger Proportion Of Wound Contraction And An Accelerated Pace Of Epithelialisation [21].

Increased Amounts Of Hydroxyproline, A Crucial Amino Acid Component Of Collagen, In The Wound Tissue Were Also Linked To Therapy. This Result Validates Increased Cross-Linking And Collagen Synthesis, Which Is Essential For Regaining Tensile Strength In The Regenerated Tissue [21].

Volkov (2008) Investigated The Ability Of An Ointment Containing 2% (W/W) Of The Methanolic Extract And 2% (W/W) Of The Total Aqueous Extract Of M. Pudica To Cure Wounds. Extracts Showed Considerable ($P < 0.001$) Wound Healing Efficacy, According To The Data.

The Total Phenol Concentration Corresponding To Gallic Acid Was Also Examined In These Two Distinct Extracts. The Methanolic And Total Aqueous Extracts Contained 11% (W/W) And 17% (W/W) Of Total Phenols, Respectively. The Methanolic Extract Showed Better Wound Healing Activity Than The Aqueous Extract, Most Likely Because It Included Phenols.[22]

Antidiabetic Activity-

Rodent Models Have Been Used To Assess The Plant's Potential For Controlling Hyperglycemia. Wistar Rats With Diabetes Caused By Alloxan Were Given Ethanolic And Petroleum Ether Extracts Of M. Pudica Leaves [23].

Hepatoprotective Activity-

Hepatoprotective Studies Support Traditional Use In The Treatment Of Liver-Related Conditions. M. Pudica's Methanolic Extract Was Demonstrated To Shield Rats From Liver Damage Caused By The Well-Known Hepatotoxin Carbon Tetrachloride (Ccl_4) [23]. Journal Of Pharma Insights And Research, 2025, 03(05), 252-259 Ccl_4 Induces

Harshita S Et Al. 256 Hepatotoxicity Through Bioactivation By Cyp450 Enzymes, Resulting In The Production Of Trichloromethyl Free Radicals That Cause Hepatocyte Membrane Destruction And Lipid Peroxidation. The High Increase In Blood Liver Enzymes, Including Serum Glutamic-Oxaloacetic Transaminase (Sgot), Serum Glutamic-Pyruvic Transaminase (Sgpt), And Alkaline Phosphatase (Alp), Was Considerably Reduced When The Extract (200 Mg/Kg) Was Administered. The Extract's Capacity To Return Total Bilirubin, Cholesterol, And These Indicators To Normal Suggests An Antioxidant-Based Approach. [24]

Antimicrobial Activity-

Compounds With Antibacterial Qualities, Such As Flavonoids, Alkaloids, And Tannins, Have Been Identified By Phytochemical Investigation Of M. Pudica. Methanolic Leaf Extracts Have Shown Significant Dose-Dependent Inhibitory Action Against A Variety Of Pathogens, Including As The Bacteria Citrobacter Divergens And Klebsiella Pneumoniae, As Well As The Fungus Aspergillus Fumigatus [25].

Additional Research Has Validated The Plant's Utility In Treating Microbial Infections By Confirming The Antifungal Activity Of Both Methanolic And Aqueous Extracts [26].

The Antibacterial Properties Of M. Pudica Leaf Methanolic Extract Were Investigated By Tamilarasi And Ananthi (2012). The Extract Was Evaluated Against Bacteria Such As Aspergillus Fumigates, Citrobacter Divergens, And Klebsiella Pneumonia At Different Concentrations Of 50, 100, And 200 Mg/Ml. Excellent Antibacterial Activity Has Been Demonstrated By The Extract. Terpenoids, Flavonoids, Glycosides, Alkaloids, Quinines, Phenol, Tannins, Saponins, And Coumarins Were Identified To Be The Active Ingredients In The Extract That May Be In Charge Of M. Pudica's Antibacterial Activity

Gandhiraja Et Al. (2009) Used A Well Diffusion Assay To Show The Antifungal Effectiveness Of M. Pudica's Methanolic And Aqueous Extract Against Several Fungal Infections, Including Aspergillus Fumigates.[27]

Antioxidants Activity-

Significant Antioxidant Potential Is Provided By M. Pudica's High Concentration Of Phenolic And Flavonoid Components. Several Tests, Such As 2,2-Diphenyl-1-Picrylhydrazyl (Dpph), Nitric Oxide (No), And 2,2'-Azino-Bis(3-Ethylbenzothiazoline-6-Sulfonic Acid) (Abts) Models, Have Been Used In Vitro To Confirm The Ethanolic Extracts' Capacity To Scavenge Free Radicals [28]. The Dpph Assay Gauges The Extract's Capacity To Give The Stable Dpph Radical A Hydrogen Atom. Since Chronic Overproduction Of No Is Linked To Inflammation And Cancer, The No Scavenging Test Is Important. The Efficacy Of The Extract Is Demonstrated By The Low Ic_{50} Values Observed In These Assays, Which Show That Only A Minimal Concentration Of The Extract Is Required To Induce A 50% Reduction In These Radicals.

Muthukumaran Et Al. (2011) Used Several Antioxidant Assays, Including The Nitric Oxide Free Radical Scavenging Assay, Dpph Assay, Abts Assay, And Hydrogen Peroxide Scavenging Assay, To Evaluate The Antioxidant Activity Of Methanolic Crude Extract Of Aerial Portions Of M. Pudica.The Standard Was Ascorbic Acid. The Extract Yielded An Ic50 Value Of 296.92 M/Ml, Whereas The Standard Had An Ic50 Value Of 131.29 Mg/Ml. Varied

Experiments Have Yielded Varied Ic50 Values For The Extract, Such As Suppression Of Nitric Oxide Free Radicals, Which Has An Ic50 Value Of 78.1±1.75. The Dpph Free Radical Assay Yielded An Ic50 Value Of 35.00±1.15 G/Ml. The Ic50 Values For The Abts And Hydrogen Peroxide Free Radicals Techniques Were 81.00±3.85 And 449.60±2.55 G/Ml, Respectively.[29]

Anti-Oestrogenic Activity-

Because M. Pudica Root Powder Is Used In Traditional Gynaecological Preparations, Its Effects On The Endocrine System Have Been Studied.

The Powder Itself Failed To Enhance Uterine Weight In An Immature Female Rat Model (A Typical Uterotrophic Experiment), Indicating That It Had No Intrinsic Oestrogenic Activity [30].

However, The Root Powder Considerably Reduced The Anticipated Estrogen-Induced Uterine Development When Combined With Oestradiol Monobenzoate, An Exogenous Oestrogen.

This Result Indicates The Existence Of Substances With Selective Oestrogen Receptor Modulator (Serm)-Like Action And Clearly Shows An Anti-Oestrogenic Or Estrogen-Antagonistic Characteristic.

These Compounds May Function As Antagonists In Particular Organs, Such As The Uterus, By Competitively Binding To Oestrogen Receptors.[30]

Hyperlipidaemia Activity-

M. Pudica Appears To Modify Lipid Profiles In Addition To Its Hypoglycemic Effects, Which Is Important For Controlling Metabolic Syndrome, A Common Comorbidity With Diabetes. When Given To Diabetic Wistar Mice, An 80% Ethanol Extract Of The Entire Plant Dramatically Lowered High Levels Of Low-Density Lipoprotein (Ldl), Triglycerides (Tg), And Total Cholesterol (Tc) [31]

High-Density Lipoprotein (Hdl) Levels Were Also Advantageously Raised By The Extract. Rats Inebriated With Ccl_4 Showed Similar Hypolipidemic Effects When Exposed To An Ethanol Extract Of The Leaves [32]. The Method Could Entail Either Increasing Bile Acid Secretion Or Inhibiting Important Enzymes Involved In The Manufacture Of Cholesterol, Like Hmg-Coa Reductase.

Diuretics Activity-

Studies Have Looked At The Plant's Diuretic Qualities, And It Is Employed In Traditional Systems To Treat Urinary Issues. In Rat Models, It Has Been Demonstrated That Both Ethanolic Extracts And Leaf Decoctions Significantly Increase Diuresis, With Effects Similar To Those Of The Common Loop Diuretic Furosemide [33]. Enhancement Of Electrolyte Excretion Seems To Be The Mechanism. Increased Sodium (Na^+, Natriuresis) And Chloride (Cl^-, Chloruresis) Concentrations In The Urine Were Observed In Studies, But Potassium (K^+) Homeostasis Was Not Significantly Disrupted At Any Dose. This Is A Good Diuretic Profile That May Have An Aquaretic Impact By Preventing The Renal Tubules From Reabsorbing Ions. [33]

Anti-Ulcer Activity-

In A Number Of Preclinical Ulcer Models, Such As Those Caused By Aspirin, Alcohol, And Pylorus Ligation, The Gastroprotective Potential Of M. Pudica Has Been Investigated [34]. These Models Differ In That Alcohol Directly Damages The Stomach Mucosa With Necrosis, Aspirin Reduces The Protective Mucous Layer By Inhibiting Prostaglandin Synthesis, And Pylorus Ligation Permits The Buildup Of Endogenous Acid. In All Models, The Ethanolic And Methanolic Extracts Significantly Reduced The Ulcer Index. Similar To Ranitidine, This Effectiveness Points To Both An Anti-Secretory (Acid-Reducing) And Cytoprotective (Mucosa-Defending) Mechanism [34].

Avinothapooshan And Sundar (2010) Investigated The Extract Of M. Pudica In Various Solvents, Including Ethanol, Methanol, Chloroform, And Diethyl Ether. The Action Was Examined In Albino Rat Models Of Ulcers Caused By Aspirin, Alcohol, And Pylorus Ligation. Ulcer Protection, Gastric Ulcer Protection, Reduction In The Total Volume Of Gastric Juice, And Gastric Ulcer Were The Criteria Assessed. Different Dosages Of 100 And 200 Mg/Kg Of Extract Were Administered Orally To The Animals, While The Conventional Medication Was 20 Mg/Kg Of Ranitidine.

Maximum Antiulcer Action Was Demonstrated By The Extract At A Dose Level Of 100 Mg/Kg. Additionally, It Was Found That The Extract Is Safe Up To 2000 Mg/Kg [35].

Anti -Venom Activity-

Sia Et Al. (2011) Investigated The Antivenom Activity Of Dried M. Pudica Root Aqueous Extracts At Two Distinct Doses. Between 0.14 And 0.16 Mg. The Study Was Conducted Against The Venoms Of Bangaruscaerulus And Najanaja. The Aqueous Extract Was Evaluated For Its Ability To Reduce The Phospholipase Activity, Hemorrhagic Activity, And Lethality Of The Venoms Of Najanaja And Bangaruscaerulus.

The Venoms' Deadly Effects Were Entirely Neutralised By The Extracts. Additionally, The Extract Has Dose-Dependently Reduced The Activities Of Protease And Hyaluronidase [36]

Anti-Diarrheal Activity

Diarrhoea Is A Disorder That Causes The Body To Temporarily Lose Water And Increases The Frequency Of Loose Or Liquid Bowel Motions Each Day. In Wistar Albino Rats With Castor Oil-Induced Diarrhoea, They Assessed The Anti-Diarrheal Potential Of The Ethanolic Leaf Extracts Of M. Pudica. 200 And 400 Mg/Kg Of The Ethanolic Extract Were Added As A Supplement. Rats' Pge2-Induced Enter Polling And Castor Oil-Induced Diarrhoea Were Both Considerably Suppressed By The Extract, Which Also Decreased Gastrointestinal Motility Following The Administration Of

Charcoal Meal. Additionally, They Stated That The Tannins And Flavonoids In M. Pudica Leaves May Be Responsible For Their Antidiarrheal Properties [37].

Anti-Asthmatic Activity-

The Anti-Asthmatic Properties Of M. Pudica's Aqueous Extract Were Investigated By Williams Et Al. (1995). Histamine-Induced Contraction In An Isolated Goat Tracheal Chain Was Studied Both In Vitro And In Vivo. The M. Pudica Extract Significantly Reduced The Contractile Action Of Histamine, According To The Results ($P<0.05$). The Goat Tracheal Chain Was Seen To Contract In A Dose-Dependent Manner.

Up To 74% Of Mast Cells Were Shielded From Degranulation By Extract Treatment When Compared To The Control Group. In Guinea Pigs, The Extract Has Demonstrated Remarkable Protection Against Histamine-Induced Bronchospasm.

Therefore, M. Pudica Has A Potential Role In The Treatment Of Asthma Because It Is An Efficient Antihistaminic Drug That Also Aids In Mast Cell Stabilizer[38]

Traditional Uses-

Uses In Ayurveda And Unani [39]-

A. The Plant Is Used To Treat A Variety Of Illnesses, Including Smallpox, Leprosy, Bilious Fever, Piles, Jaundice, And Tainted Blood And Bile.

B. According To Ayurveda, Leprosy, Dysentery, Vaginal And Uterine Complications, Inflammations, Burning Sensations, Asthma, Leucoderma, Exhaustion, And Blood Disorders Are All Treated With This Bitter, Acrid, Cooling Root.

C. Its Root Is Utilised As A Remedy Or Substitute In The Unani Medical System For Conditions Like Leprosy, Jaundice, Bilious Fevers, Piles, And Blood Impurities.

D. It Works Wonders For Diarrhoea (Ahtisaari) E. For Impotence And General Weakness, Some Herbalists Suggest It.

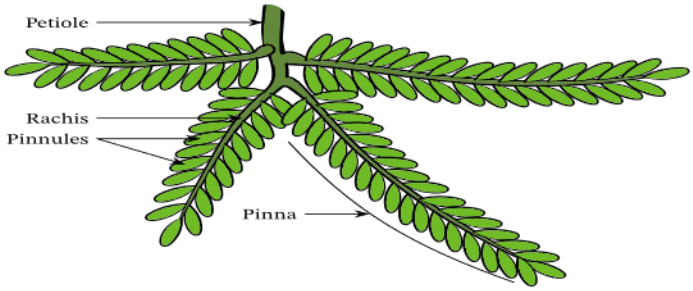

Fig.2[44]

Uses Of Sidha In Medicine [41]-

A. The Herb Helps With Gynaecological Issues, Diarrhoea, And Hemorrhagic Infections.

B. It Is Used To Alleviate Sexual Weakness, Heal Wounds, And Decrease Kapha And Pitta.

C. A 20–30 Ml Dose Of This Plant's Juice Is Administered In The Morning To Diabetics.

D. Patients With Diabetes Are Given A Dose Of Two To Five Grammes Of Dried, Powdered Leaves And Roots.

E. The Leaves Are Used To Relieve Hip And Renal Pain After Being Boiled In Water.

F. To Treat Pterygium, The Plant's Juice Is Administered Externally In An Equal Amount To Horse Urine.

Toxicity-

The Brine Shrimp Lethality Assay (Bsl) Has Been Employed Frequently In The First Screening Of The Isolated Compounds And Crude Extracts To Evaluate The Toxicity Towards Brine Shrimp, Which May Also Indicate Potential Cytotoxic Qualities Of The Test Materials. It Has Been Demonstrated That Cytotoxic Chemicals Typically Exhibit Good Activity In The Bsl Test. Due To Its Ease Of Use And Affordability, This Assay Can Be Suggested As A Guide For The Identification Of Pesticidal And Anticancer Drugs. In The Bsl Test, There Was No Discernible Toxicity Of M. Pudica Extracts To Brine Prawns.

Podophyllotoxin, The Positive Control, Had A Concentration Of $2.8 \times 10\text{-}3$ Mg/Ml.[40]

Leaf movements-

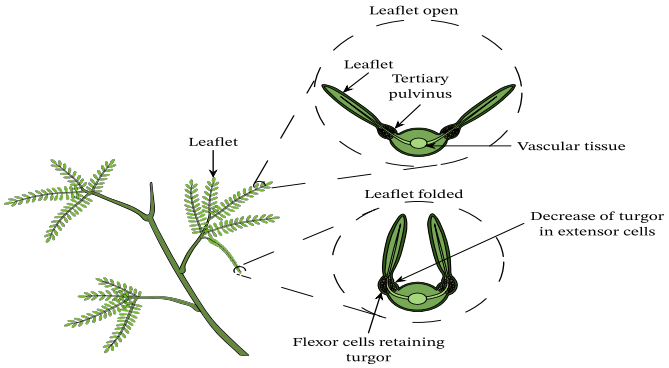

Fig. 3[45]

The “Touch-Me-Not” Plant, Mimosa Pudica, Exhibits A Special Phenomena Known As Seismonasty, Which Is The Quick Movement Of Leaves In Reaction To Touch, Heat, Vibration, Or Light. Specialised Cells At The Base Of The Leaflets (Referred To As The Pulvinus) Produce An Electrical And Chemical Signal When The Leaf Is Touched. A Quick Drop In Turgor Pressure Results From The Movement Of Potassium And Water Ions Out Of The Pulvinus Cells Caused By This Signal. Consequently, The Petiole Momentarily Droops And The Leaflets Fold Inward. The Leaf Can Reopen When The Ions And Water Eventually Return To The Cells, Re-Establishing Turgor Pressure.

Type Of Stimulus	Designation
Shaking	Seismonastic
Touching	Thigmonastic
Wounding	Traumonastic
Light	Photonastic
Heat	Thermonastic
Downward-Bending	Epinastic
Response To Water	Hydronastic
Response To Gravity	Geonstaic
Response To Contact	Haptonastic

Table.1[43]

Growing And Gathering-

Although It Can Spread To Subtropical Locations, This Plant Thrives Naturally In Warm Tropical Climates. It Can Flourish.

Even At Elevations Of 1,300 Meters Above Sea Level In Mountainous Regions.

Although It Can Withstand Temperatures As Low As 10°C And As High As 32°C, The Ideal Range For Growth Is Between 22°C And 28°C. They Cannot, However, Endure Frigid Or Icy Conditions.

The Plant May Grow In Regions With Rainfall As Low As 900 Mm Or As High As 3,000 Mm, But It Prefers Locations With Rainfall Between 1,000 And 2,000 Mm Annually. It Thrives In Sunny Environments.[46]

M. Pudica's Worldwide Distribution-

M. Pudica Is Indigenous To Central And South America.

In Tanzania, South Asia, South East Asia, And Numerous Pacific Islands, It Is Considered An Invasive Species. It Is Particularly Grown In The Southern States Of India. In Northern Territory, The Plant Is Classified As A Weed. These Days, It Has Also Been Introduced To Other Areas, Including East Asia, Mauritius, Nigeria, And The Seychelles. [47]

Mimosa Mucilage As An Excipient With Prolonged Release –

The Purpose Of This Study Was To Look At The M. Pudica Seed Mucilage's Sustained Release Characteristics. Tablets With A Matrix . The Wet Granulation Process Was Used To Produce Diclofenac Sodium With Varying Amounts Of Mucilage And Dibasic Calcium Phosphate As Diluent. The Tablets' Average Weight, Pharmacological Content, Hardness, And Physical Appearance Were All Consistent.

The Results Of An In Vitro Release Experiment Using A Usp Type Ii Dissolution Rate Apparatus In A Dissolution Medium Consisting Of 900 Ml Of 0.1 N Hcl For Two Hours, Followed By Phosphate Buffer (Ph 6.8) For Twenty-Four Hours At 37 °C And Fifty Rpm Showed That The Release Of Drug Decreased As The Proportion Of Mucilage In The Matrix Increased.[48]

Conclusion-

Because of its many therapeutic benefits, mimosa pudica is a significant medicinal herb that is frequently used in traditional medical systems. Because the plant contains bioactive compounds such alkaloids, flavonoids, tannins, and saponins, it exhibits a variety of pharmacological activities, including antioxidant, anti-inflammatory, antimicrobial, and wound healing. Despite its enormous therapeutic potential, more investigation and clinical studies are needed to determine its mechanism of action, standardise dosage, and assess safety. Therefore, Mimosa pudica may be a useful resource for the development of herbal drugs and pharmaceutical uses in the future.

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