Original Article

Mimosa Pudica: Antidiabetic Potential Review

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Abstract

Background: Diabetes mellitus is a widespread health issue, which affects more people across the globe. This is a chronic hyperglycemic condition that is characterized by metabolic abnormality. The increased demand of safe and affordable treatment modalities has led to interest in herbal remedies especially that of *Mimosa pudica*. **Objectives:** This review aims to evaluate the antidiabetic effects of *Mimosa pudica* according to its chemical composition, pharmacological effects, and laboratory test *in vitro* and *in vivo*. **Methods:** Published research articles that explored the phytochemistry, antidiabetic processes and experiments on Mimosa pudica have been thoroughly searched using literature search. The in vitro data available to test enzyme inhibition, cell cultures and in vivo data on animal models of diabetes (STZ-, alloxan-induced and high-fat diet-induced models) were reviewed. **Key Findings:** Mimosa pudica contains bioactive compounds such as flavonoids, alkaloids, tannin, phenolics and saponins. Research has demonstrated that the plant is effective in lowering the concentration of blood glucose, controlling lipid metabolism, increasing insulin release and protecting pancreatic beta-cells. The mechanisms involved in these processes include α-amylase and α-glucosidase inhibition, facilitating glucose uptake through GLUT4 activation, alleviating oxidative damage, and reducing inflammation. **Conclusion:** Although Mimosa pudica has much potential in being an antidiabetic drug, a lack of clinical evidence is a challenge. More properly-conducted clinical studies are thus urgently required to establish its efficacy and safety in use by humans.

Keywords: Diabetes Mellitus, *Mimosa Pudica*, Blood Glucose Level, Lipid Profile.

Introduction

Mimosa pudica, commonly known as the "touch-me-not" plant, is a well-recognized medicinal herb belonging to the Fabaceae family. Native to South and Central America, it is now widely distributed across tropical and subtropical regions, including India, Africa, and Southeast Asia. The plant is notable for its unique seismonastic movement, where its leaves fold upon touch, and it has long been used in traditional systems of medicine such as Ayurveda and various folk practices for the treatment of ailments including diabetes, inflammation, wounds, diarrhea, and urinary disorders.[1,2]

The global rise in diabetes mellitus, a chronic metabolic disorder characterized by persistent hyperglycemia, has created an urgent need for effective, safe, and affordable therapeutic options. In this context, medicinal plants have gained considerable attention as potential alternatives or adjuncts to conventional therapies.[3] *Mimosa pudica* has emerged as a promising candidate due to its rich phytochemical profile, which includes alkaloids, flavonoids, tannins, glycosides, saponins, and phenolic compounds.[4] These bioactive constituents are reported to contribute to its diverse pharmacological activities, particularly its antidiabetic, antioxidant, and anti-inflammatory effects.[1,5]

Several experimental studies have demonstrated that extracts of *Mimosa pudica* can significantly reduce blood glucose levels, enhance insulin secretion, improve lipid

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profiles, and protect pancreatic β-cells from oxidative stress-induced damage. Both in vitro assays and *in vivo* animal models, such as streptozotocin- and alloxan-induced diabetic rats, have provided supportive evidence for its antidiabetic potential.[6] Additionally, mechanisms such as inhibition of carbohydrate-digesting enzymes, stimulation of glucose uptake, and modulation of insulin signaling pathways have been proposed.[7]

Despite a large body of research on the antidiabetic properties of *Mimosa pudica* conducted *in vitro* and *in vivo*, the available literature shows that there are a number of critical gaps that hinder the translation of the technology. The existing evidence is mainly based on experimental models, and there is a significant lack of properly designed clinical trials to confirm its effectiveness and safety in humans. Also, the extraction procedures, dosages and designs of experiments are highly heterogeneous, which leads to unreliable results and low reliability. Although several pharmacological actions, such as enzyme inhibition, promotion of insulin secretion, and antioxidant action, have been suggested, the specific molecular pathways and interactions with targets are not well defined. Moreover, little has been done in the standardization of plant extracts and in the identification of particular bioactive compounds that can cause the observed effects. There are also no comprehensive toxicological assessments, pharmacokinetic profiling and long-term safety evaluations. So, the interdisciplinary and coordinated studies are needed to address these gaps and lead to the creation of *Mimosa pudica* as a clinically feasible antidiabetic treatment drug.

Scientific Classification[8]

Kingdom: Plantae
Division: Magnoliophyta
Class: Magnoliopsida
Order: Fabales
Family: Fabaceae
Subfamily: Mimosoideae
Genus: Mimosa
Species: M.pudica

Morphology

Root: The root system is cylindrical, tapering, and pendant, with secondary and tertiary branches. It varies in length and can be up to 2 cm thick. The surface is somewhat rough or displays longitudinal wrinkles. The outer colour ranges from grayish-brown to brown, while the cut surface appears pale yellow. The texture is hard and woody, with a fibrous bark. It has a distinct odor and a mildly astringent taste.

Stem: The stem is cylindrical, reaching up to 2.5 cm in diameter. It is sparsely covered with small prickles and long, weak bristles. The external surface has a light brown hue, whereas the internal surface appears gray. The bark is fibrous and can be easily separated from the wood.

Leaf: The leaves are digitately compound, featuring one or two pairs of sessile, hairy pinnae. They are arranged alternately, petiolate, and stipulate with a linear-lanceolate shape. The leaflets number between 10 to 20 pairs, measuring 0.6–1.2 cm in length and 0.3–0.4 cm in width. They are sessile, obliquely narrow, or linear oblong, with an obliquely rounded base and an acute apex. The surface is nearly glabrous, and the coloration is yellowish-green.

Flower: The flowers are pink and appear in globose clusters. The peduncles are prickly. The calyx is minuscule, while the corolla is pink with four ovate-oblong lobes. There are four stamens that extend prominently. The ovary is sessile and contains numerous ovules.

Fruit: The fruit is a simple, dry lomentum, measuring between 1–1.6 cm in length and 0.4–0.5 cm in width. It consists of undeveloped segments with persistent sutures. Each fruit contains two to five seeds, which are surrounded by yellowish bristles along the sutures. The bristles are approximately 0.3 cm long. The fruit is globose and has a straw-colored appearance.

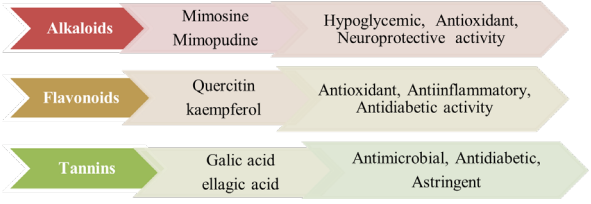
Seed: The seeds are compressed, with an oval-elliptic shape, and range from brown to gray in colour. They measure about 0.3 cm in length and 2.5 mm in width. Each seed has a distinct central ring on both surfaces.[9]

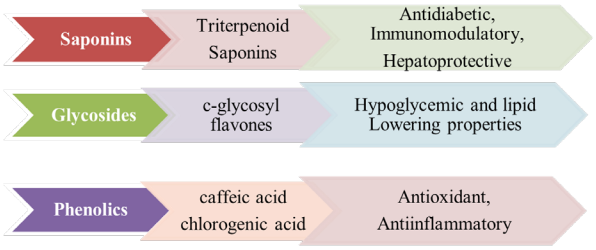
Phytochemical Screening of Mimosa pudica:

Phytochemical Screening of *Mimosa Pudica*.

Components	Leaf	Stem	Root
Tannin	+	+	+
Alkaloid	+	+	+
Saponin	+	+	+
Steroids	-	-	-
Flavonoid	+	+	+
Phenols	+	+	+

Phytochemical Constituents with Reported Activities





Pharmacological Activities

1. Anti-hyperglycemic Activity

Kirk *et al.*[10] investigated the chloroform leaves extract of *M. pudica* for showing its antihyperglycemic activity. The experiment was performed on Wister albino rats. The chloroform extract showed significant hyperglycemic activity. The bioactive constituents like flavonoids, glycosides and alkaloids content of the extract are may be responsible for its antihyperglycemic activity.[10]

2.Analgesic Activity

Vikram *et al.*[11] studied the ethanolic extract of *M.pudica* leaves for its analgesic activity using the hot plate method in acetic acid-induced writhing reflex models. The treating group was supplemented with the extract at various doses of 200, 400 and 500 mg/kg. The extract has revealed its best analgesic potential at a dose of 500 mg/kg and has immensely decreased the acetic acid-induced writhing response. Flavonoid content of leaves extract was found to be responsible for its analgesic potential.[11]

3. Anti-Inflammatory Activity

Goli *et al.*[12] tested the various solvents (petroleum ether, ethanol and aqueous extracts) of *M. pudica*. The research was conducted on carrageenan-induced paw edema and cotton pellet granuloma in male albino rats. The animals were orally supplemented with varying doses of extracts such as 50, 100 and 200 mg/kg of extracts while Indomethacin was employed as the standard (employed at a concentration of 10 mg/kg). Results showed that extract has high anti-inflammatory potency and can be prescribed as a safe anti-inflammatory drug.[12]

4. Wound Healing Activity

Volkov[13] investigated wound healing activity of an ointment prepared with 2% (w/w) the methanolic extract and 2% (w/w) the total aqueous extract of M. pudica. The findings indicated that extracts shown significant ($P < 0.001$) wound healing activity. These two distinct extracts were further investigated for total phenols content equivalent to Gallic acid. Total phenols content was 11% (w/w) and 17% (w/w) in methanolic and total aqueous extract, respectively. Compared to aqueous extract, methanolic extract had good wound healing activity likely due to phenols constituents.[13]

5. Anti-malarial Activity

Aarthi and Murugan[14] explored the ethanolic extract of *M. pudica* leaves for antimalarial activity. The experiment was performed on Plasmodium berghei induced infection in mice models. Findings showed the impressive antiplasmodial activity of *M. pudica* leaves in all models tested in the antimalarial study. Phytochemical screening revealed the presence of some crucial antiplasmodial compounds like terpenoids, flavonoids and alkaloids in *M. pudica* leaves which could be accountable for making its antimalarial activity.[14]

6. Anti-depressant Activity

In attention, *M. pudica* has been reported to have both anxiolytic and antidepressant activities. Kirk *et al.*[10] assessed the effect of aqueous extracts of *M. pudica* dried leaves on behavioral activity. The extract was administered at different concentrations of 2, 4, 6 and 8 mg/kg. The research was conducted through elevated plus-maze and DRL-72s test in rat models. The drug Diazepam at a concentration of 1.3 mg/kg was utilized as the control drug. A marked activity was achieved with high anti-anxiety and antidepressant activity of *M. pudica* leaves extract.[10]

7. Anti-convulsant Activity

Ngo Bum *et al.*[15] examined the anticonvulsant activity of *M.pudica* leaves decoction against pentylenetetrazol and strychnine induced seizures in mice models. The decoction was administered intraperitoneally at a dose of 1000-4000 mg/kg. The decoction has markedly protected the mice against strychnine-induced seizures compared picrotoxininduced seizures. The decoction has also countered the N-methylD-aspartate induced turning behavior. Therefore, it can be the decoction which can be recommended as a good anticonvulsant agent.[15]

8. Anti-helmintic Activity

Vikram *et al.*[11] investigated the anthelmintic activity of different extracts such as petroleum ether, ethanol and aqueous extracts of *M. pudica* seeds. The test worm employed was Pheretimaposthuma. The extracts were assessed in diverse concentrations of 100, 200 and 500 mg/kg. Albendazole was utilized as a reference drug. The treatment with alcoholic and aqueous extract caused paralysis and death of helminthic worm in dose-dependent fashion compared to standard drug while petroleum ether was weak anthelmintic activity.[11]

9. Anti-oxidant Activity

Muthukumaran *et al.*[16] evaluated the antioxidant activity of methanolic crude extract of aerial parts of *M. pudica* through various antioxidant assays viz. Nitric oxide free radical scavenging assay, DPPH assay, ABTS assay and hydrogen peroxide scavenging assay. The ascorbic acid was taken as standard. The extract has achieved an IC50 value of 296.92 µ/ml whereas the IC50 value achieved with the standard was 131.29µg/ml. The extract has achieved various IC50 values with various assays like inhibition of nitric oxide free radicals with an IC50 value of 78.1±1.75. The IC50 values with the DPPH free radical assay were 35.00±1.15 g/ml. ABTS and

Hydrogen peroxide free radicals methods revealed IC50 values of 81.00±3.85 and 449.60±2.55 g/ml, respectively. Antioxidant activity was also evaluated for varying parameters like glutamate oxaloacetate transaminase, glutamate pyruvate transaminase, alkaline phosphate, bilirubin and total protein. Findings indicated that extract treatment has immensely increased the amount of these antioxidant enzymes, thereby can be utilized to guard the cell against oxidative stress.[16]

10.Anti-microbial Activity

Tamilarasi and Ananthi[17] investigated the antimicrobial activity of methanolic extract of *M. pudica* leaves. The extract was tested in different concentrations of viz. 50, 100, 200 µg/ml against microorganisms such as Aspergillus fumigates, Citrobacter divergens and Klebsiella pneumonia. The extract has displayed outstanding antimicrobial activity. It was seen that terpenoids, flavonoids glycosides, alkaloids, quinines, phenol, tannins, saponins and coumarins are the active components present in the extract which may be responsible for the antimicrobial activity of *M. pudica*.[17]

11. Anti-ulcer Activity

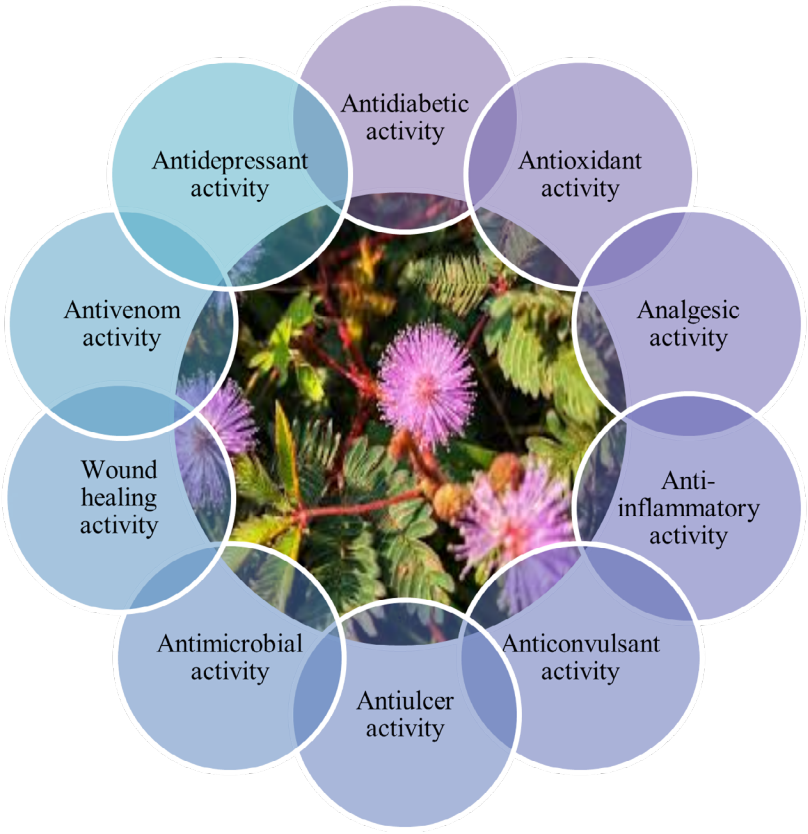
Vinothapooshan and Sundar[18] investigated the various solvents (chloroform, diethyl ether, methanol and ethanol) extract of *M. pudica*. The activity was tested in aspirin, alcohol and pylorus ligation induced ulcer in albino rat models. The parameters tested were ulcer protection, gastric ulcer protection, decrease in a total volume of gastric juice, and gastric ulcer. The animals were treated orally with various dosages of 100 and 200 mg/kg of extract while 20 mg/kg of the dose of Ranitidine was utilized as standard drug. The extract at the dose level of 100 mg/kg exhibited maximum antiulcer activity. It was also observed that the extract is nontoxic up to 2000 mg/kg.[18]

12. Anti-venom Activity

Sia *et al*.[19] examined the antivenom activity of aqueous extracts of dried root of *M. pudica* in two concentrations, namely 0.14mg and 0.16mg. Experiment was conducted against Najanaja and Bangaruscaerulus venoms. The aqueous extract was used to test inhibition activity on lethal, phospholipase and hemorrhagicactivity of Najanaja and Bangaruscaerulus venoms. The extracts were effective in abolishing the lethality of the venoms. The extract has also suppressed the hyaluronidase and protease activities in a dose-dependent manner.[19]

13. Anti-hepatotoxic Activity

Nazeema and Brindha[20] investigated the antihepatotoxic activity of ethanolic extract of *M. pudica*. The extract was administered at adose of 200 mg/kg body weight in CCl4 induced hepatic damage in Wister albino rats. The activity was evaluated in terms of various parameters such as glutamate oxaloacetate transaminase, glutamate pyruvate transaminase, alkaline phosphate, bilirubin and total protein. The extract has been found to possess a good hepatoprotective activity in a dosedependent fashion.[20]



Models Reported for the Antidiabetic Activity of Mimosa Pudica

Several *in vivo* studies have explored the antidiabetic potential of *Mimosa pudica* using different animal models. The review suggests that the plant extract can effectively regulate blood glucose levels, improve insulin secretion, and provide protection against oxidative stress-induced pancreatic damage. The following models have been used to evaluate its efficacy:

In vivo Models

1. Streptozotocin (STZ)-Induced Diabetic Rat Model

The methanolic extract of *Mimosa pudica* leaves (MEMP) showed a high antidiabetic and antihyperlipidemic in streptozotocin (STZ)-induced diabetic rats. Parasuraman *et al.*[21] found that MEMP reduced the levels of fasting blood glucose, total cholesterol (TC), triglycerides (TG), low-density lipoprotein (LDL), and very-low-density lipoprotein (VLDL) significantly when administered orally at the dosage of 125, 250, and 50 This was found to have similar effect to the standard drug glibenclamide (20 mg/kg). Protective effects of STZ were also observed on the pancreas, liver, and kidney with less cellular damage caused by STZ. The authors postulated that such effects could be explained by the presence of flavonoids, alkaloids, tannins, phenolic compounds, and saponins in the methanolic extract that might be used by antioxidant activity, defense of pancreatic 8-cells, inhibition of 8-amylase, and inhibition of intestinal glucose absorption. Therefore, *Mimosa pudica* methanolic extract has a high potential in becoming a natural therapeutic agent in treating diabetes and other related dyslipidemia.[21]

2. Alloxan-Induced Diabetic Rat Model

Ethanolic leaf extract of *Mimosa pudica* was significantly antidiabetic and hypolipidemic in dose-dependent activity in alloxan-induced diabetic Wistar rats. The extract in an oral dosage of 100, 200, 300 and 400 mg/kg body weight was found to significantly decrease the high blood glucose level and enhance the level of insulin secretion as opposed to the diabetic control rats. It was observed that the best response was at 300 mg/kg and 400mg/kg where blood glucose level reduced by 266.12 ppm/L to 114.81 ppm/L and 105.45 ppm/L respectively which was similar to metformin (200mg/kg). The treatment had a considerable effect on total cholesterol and triglycerides as well, increasing the level of HDL and decreasing the atherogenic index. Moreover, the levels of HbA1c became normal, which means that the glycemic control was improved. The positive effects were largely ascribed to the existence of phenolic and flavonoid compounds in the extract, which play the roles of antioxidant activity, increased sensitivity of insulin, and glucose metabolism. Therefore, *Mimosa pudica* leaf extract had a high potential in treating diabetes and lipid abnormalities associated with it in alloxan-induced diabetic rats.[22]

3. High-Fat Diet (HFD) and STZ-Induced Type 2 Diabetes Model

The ethanolic extract of *Mimosa pudica* leaves showed important antidiabetic, antihyperlipidemic and antioxidant properties in high-fat diet (HFD) and low-dose streptozotocin (STZ)-induced type 2 diabetic rats. The research revealed that oral administration of the *Mimosa pudica* extract at 100, 200, and 400mg/kg of body weight over 45 days was significant to lower fasting blood glucose, oral glucose tolerance and plasma insulin levels when compared to the diabetic control rat. The therapy also had a great effect in reducing the serum total cholesterol, triglycerides, low density lipoprotein (LDL), and very low density lipoprotein (VLDL), and elevating the high density lipoprotein (HDL). Moreover, hepatic antioxidant enzymes, including superoxide dismutase (SOD), catalase (CAT), reduced glutathione (GSH), were reinstated, which is evidence of the protection against oxidative stress. Additional histopathological analysis supported the pancreatic β-cell regeneration and the enhanced liver structure. These positive effects were primarily explained by the presence of flavonoids, alkaloids, phenolic compounds, and tannins in the extract that could enhance insulin sensitivity, decrease lipid peroxidation and shield pancreatic tissues. Therefore, *Mimosa pudica* leaves extract had a promising therapeutic capacity in the treatment of type 2 diabetes and related metabolic complications.[23]

In vitro Models

1. α-Amylase and α-Glucosidase Inhibition Assays

The alpha-amylase and alpha-glucosidase assays have been commonly used to determine the antidiabetic potential of *Mimosa pudica* by evaluating its capacity to slow down the digestion of carbohydrates and absorption of glucose. According to Shrestha *et al.*[24], *Mimosa pudica* extract of Nepalese origin was found to have a strong inhibitory effect on both digestive enzymes with the use of CNPG3 in the α-amylase assay and PNPG in the α-glucosidase assay. The extract had an α-glucosidase IC 5 value of 1.059 + 0.14 ug/mL and an α-amylase IC 5 value of 164.9 + 0.95 ug/mL. Better control of postprandial hyperglycemia with fewer gastrointestinal side effects, which is achieved with strong α-glucosidase inhibition as opposed to strong α-amylase inhibition, is due to the stronger α-glucosidase inhibition. These results were further verified in silico in molecular docking, in which phytoconstituents (quercetin, avicularin and stigmasterol) exhibited a high binding affinity to the active sites of the two enzymes. These findings suggest that *Mimosa pudica* has potential enzyme inhibitory properties and can be considered a potential natural alternative to manage diabetes.[24]

2. Glucose Uptake Enhancement in Cell Cultures

In vitro glucose uptake amplification analyses have revealed that *Mimosa pudica* has a considerable antidiabetic activity by enhancing muscle and adipocyte cell models of peripheral glucose consumption. Sopha

et al.[25] found that *Mimosa pudica* extract was able to improve glucose uptake in L6 myotube cells without exhibiting cytotoxicity. The extract was also able to prevent the oxidative damage on STZ-induced RINm5F insulinoma cells, and induce the secretion of insulin as well as glibenclamide. Notably, the enhanced glucose uptake correlated with the expression of glucose transporter proteins GLUT1 and GLUT4, which signifies enhanced sensitivity of cells to glucose and insulin. Likewise, the optimized ethanolic extracts of *Mimosa pudica* strongly stimulated glucose uptake in 3T3-L1 adipocyte cells in the 2-NBDG assay, in which the extract in combination with insulin had a synergistic effect and enhanced glucose uptake almost 6-fold more than insulin alone. These results indicate that *Mimosa pudica* has an insulin-mimetic effect and promotes glucose metabolism by stimulating the expression of glucose transporters, which validates its use in the treatment of diabetes.[25]

3. Insulin Secretion Assay in Pancreatic β-Cells

Mimosa pudica has been shown to exhibit considerable insulin secretagogue effects in RINm5F insulinoma cells in pancreatic 2-cell insulin secretion assays and therefore the plant has potential to be used as a natural antidiabetic. Sopha *et al.*[25] tested the *Mimosa pudica* extract on streptozotocin (STZ)-induced damaged RINm5F pancreatic β-cells as a model of diabetic in vitro. The extract was not cytotoxic at 1000 µg/mL and it was able to protect beta-cells against cell death caused by STZ in a concentration-dependent fashion. Notably, *Mimosa pudica* extract at the concentration of 100,000 µg/mL greatly induced insulin secretion and was equally active as the conventional drug glibenclamide. The research hypothesized that β-cell protection and increased insulin release by antioxidant action and improved 2-cell function could be due to flavonoids, tannins and saponins contained in the extract. These results suggest that *Mimosa pudica* can be used to regenerate the activity of pancreatic 8 cells and enhance insulin production and is a safe candidate to be used in the management of diabetes.[25]

Clinical Evidence

Although there is a plethora of preclinical studies on the antidiabetic properties of *Mimosa pudica*, clinical findings in humans are very minimal. Up to now, there were no any well-established randomized controlled trials (RCTs) to assess the effectiveness and safety of *Mimosa pudica* among diabetic patients. The majority of the known data is based on the ethnomedicinal reports and common survey of herbal medicine where *Mimosa pudica* has been utilized traditionally in the management of diabetes and other associated metabolic diseases.[9,26] Nonetheless, these reports do not have standard methods, controlled conditions and quantitative outcome measures, which limits their scientific validity.

There is limited observational and indirect clinical evidence to indicate that plant-derived compounds that share a phytochemical profile (like flavonoid and phenols) have positive effects in glycemic control in humans, including enhanced insulin sensitivity and decreased oxidative stress.[27] Considering that *Mimosa pudica* is a plant that contains abundant levels of these bioactive constituents, it can be hypothesized that the same effects will be realized in clinical settings.[1] Nonetheless, this is a mere speculation because direct human research that specifically examines *Mimosa pudica* extracts is lacking. Moreover, lack of standardized dosing schedules, variability in plant extract preparation and inadequate safety and toxicity information are major obstacles to clinical translation. The therapeutic use of *Mimosa pudica* cannot be consistently determined without rigorous pharmacokinetic, pharmacodynamic and long-term toxicity studies in humans.

Thus, there is an urgent necessity to conduct properly designed clinical trials, such as randomized controlled trials, to determine its effectiveness, the optimum dosage, safety profile, and the presence of drug-herb interactions. To counter such gaps is crucial to legitimize the positive preclinical data and enable the translation of *Mimosa pudica* to become a valid antidiabetic treatment.

Limitations and Future Directions

Although the evidence on antidiabetic *Mimosa pudica* has been on the increase, there are a number of limitations in the translation of the experimental research to clinical use that limit the application of *Mimosa pudica* as antidiabetic. One crucial drawback is that the majority of the literature is restricted to in vitro tests and in vivo animal models with little or no well-controlled human clinical trials to support its effectiveness and safety in diabetic individuals.[5,9] Also, there is a lot of disparity in extraction procedures, solvent regimes, dosages and experimental procedures between studies, which complicates comparisons and the need to achieve reproducible therapeutic effects.[28] Reinforced by the lack of standardized formulations, the design of standardized and clinically acceptable herbal preparations is further constrained.

The other notable weakness is that there is a lack of understanding of the exact molecular pathways involved in its antidiabetic effects. Despite the proposed pathways, including α-amylase and α-glucosidase inhibition, insulin secretion stimulation, glucose uptake, and antioxidant protection, they are not completely understood at a molecular level. In addition, extensive toxicological assessments, such as long-term safety tests, pharmacokinetic modeling, and possible drug-herb interactions are only poorly studied.[27] The discovery and separation of the bioactive compounds that cause these pharmacological effects are also not fully developed, thus restricting the therapeutic development of specific drugs. The research should be centered to standardization of plant extracts, such as the appropriate characterization of active constituents and optimization of dosage to replicate and ensure therapeutic consistency. Further molecular investigations with genomics, proteomics, and metabolomics are necessary to gain a better

understanding of the specific mechanisms that are involved in its antidiabetic effect. Notably, randomized controlled clinical trials ought to be performed well in order to determine efficacy, safety and optimal dosage and potential interaction with conventional antidiabetic medications. Moreover, development of formulations, improvement of bioavailability, and long term toxicity will also be necessary in translating preclinical results to clinical useful antidiabetic therapy.[27]

Conclusion

Mimosa pudica has great promise as an antidiabetic plant because it is rich in phytochemical components including flavonoids, alkaloids, tannins, glycosides, and phenolics that play a role in its antihyperglycemic, antioxidant, and pancreatic beta-cell protective activity. In vivo and in vitro reports have shown that it lowers blood glucose levels, improves lipid profiles, augments insulin release, suppresses the activity of the α-amylase and α-glucosidase enzymes and enhances glucose uptake. The extracts that have been tested include among other extracts, methanolic and chloroform extracts which have been found to be more effective in antidiabetic activities as compared to aqueous extracts because they tend to have more active phytoconstituents. Nevertheless, the majority of studies have been done on preclinical models, and clinical evidence is still non-existent in humans. It requires more studies to standardize extracts, define active compounds and to establish clinical trials to prove its safety and therapeutic efficacy in the management of diabetes.

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