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The Medicinal Marvel *Mukia Maderaspatana*: A Review of its Ethnobotany Phytochemistry, and Evidence based Pharmacological Activities

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ABSTRACT :

Background: *Mukiamaderaspatana* (Linn.) Cogn., commonly known as Indian Squirting Cucumber, is a traditional medicinal plant belonging to the Cucurbitaceae family that has been extensively used in Ayurvedic, Siddha, and folk medicine systems across India and South Asia. This comprehensive review aims to consolidate current knowledge on the ethnobotany, phytochemistry, and evidence-based pharmacological activities of *M. maderaspatana* to support its development as a standardized phytotherapeutic agent.

Methods: The review encompassed qualitative and quantitative phytochemical analyses, including detection tests for alkaloids, flavonoids, tannins, saponins, steroids, and terpenoids. Advanced analytical techniques such as High Performance Thin Layer Chromatography (HPTLC), UV-Visible spectroscopy, and Fourier Transform Infrared (FT-IR) spectroscopy were employed for chemical characterization. Mineral element determination and various in vitro and in vivo pharmacological activity studies were also analyzed to establish the plant's therapeutic efficacy.

Results: Phytochemical screening revealed the presence of diverse bioactive compounds including alkaloids, flavonoids, tannins, saponins, steroids, terpenoids, cardiac glycosides, carbohydrates, and phenolic compounds in different parts of the plant. The leaves specifically contain compounds such as 2-Methylthiolane, S,S-dioxide, Diazene, bis(1,1-dimethylethyl), and various other antimicrobial active phytochemicals. Extensive pharmacological studies demonstrated significant hepatoprotective activity through reduction of ALT, SGOT, and SGPT levels, anti-hyperglycemic effects comparable to metformin, anti-inflammatory properties effective against rheumatoid arthritis, and antimicrobial activity .

Conclusion: This comprehensive review establishes M.*maderaspatana* as a promising medicinal plant with scientifically validated therapeutic potential across multiple disease conditions. The documented hepatoprotective, anti-diabetic, anti-inflammatory, and antimicrobial activities support its integration into modern phytotherapy protocols. However, further research focusing on standardization, formulation development, clinical trials, and safety profiling is essential to fully realize the therapeutic potential of this medicinal marvel and establish it as a reliable, eco-friendly therapeutic option for various human ailments.

Keywords:*Mukiamaderaasptana*, ethnobotany, phytochemistry, pharmacological activities, traditional medicine, phytotherapy, Cucurbitaceae, medicinal plants.

INTRODUCTION

Since ancient times, natural products-particularly those derived from plants-have continuously been a significant source of medicinal medicines. According to estimates from the World Health Organization (WHO), almost 80% of people on the earth get their main medical care via traditional pharmaceutical systems. India has a wide variety of plants that are used for fuel, fodder, medicinal, food, and religious purposes. In our nation, the traditional medical systems of Ayurveda, Yoga, Unani, Siddha, and Naturopathy have been practiced for many years [(1)]. Since the beginning of time, people have used herbs and natural products to treat a wide range of illnesses. The varied flora of the Indian subcontinent includes both fragrant and medicinal species. After all, before launching Unani and Ayurvedic medications as first-line drug delivery, efforts should be made to analyze, standardize, and validate their efficacy, safety, and potential. All civilizations have employed plant-based medicines. There is currently widespread use of plant-based medications, and several nations devote 40% to 50% of their whole health budget to the development of new medications. It is believed that herbal remedies improve health and have fewer adverse effects [(2)]. *Mukiamaderaspatana's* phytoconstituents have hepatoprotective, antirheumatic, diuretic, anti-flatulent, antidiabetic, anti asthmatic, anti-bronchitis, and anti-inflammatory properties. They are also used to treat toothaches, vertigo, and biliousness. Musumusukkaichooranam and other medicinal products like Asthacure, Asthmex, Bronkease, Respease, and others have been used in naturopathy to treat chronic respiratory diseases in humans. They are also traditionally used as a medication for cattle. Pharmaceutical, food, and

cosmetic industries all depended on medicinal plants [3]. Both plants and human health are impacted by microorganisms (bacteria, fungus, and viruses). India is incredibly rich in medicinal plants and their resources, which come in a variety of forms and are cultivated in a range of ecological and climatic conditions. The therapeutic potential of medicinal plants was not well developed in ancient India. In Rig-Veda (4500-1600 b.c.), the usage of medicinal plants is mentioned for the first time. Much research has been done on medicinal plants, and numerous new medications have been developed along with the screening of their phyto-constituents and biological significance. Approximately 15,000 to 20,000 of India's 45,000 plant species have good therapeutic qualities. However, the traditional society only uses 7000 - 7500 of their medicinal properties. The field of chemistry that studies the chemical makeup of plants or plant products (the chemistry of natural products) is called phytochemistry, from the Greek word "phyto," which means plant [4]. The naturally occurring, bioactive chemical substances that are present in plants are called phytochemicals. Therefore, the current study's review aims to identify phytoconstituents, assess their pharmacological potential, and characterize them using GC-MS, HPTLC, TLC, and FTIR analyses. This will subsequently help to develop "Phytotherapy" for a variety of human ailments using *Mukia Maderaspatana.*

Figure :1 ***MukiaMaderaspatana*****leaves**

Figure: 2 ***Mukia Maderaspatana Fruit's***

Figure:3 ***Mukiamaderaspatana*** **Flower**

PLANT PROFILE

Mukiamaderaspatana, also known as Indian Squirting Cucumber or ***Mukiamaderaspatana***, is a plant that is primarily found in India and other parts of South Asia. It is a member of the Cucurbitaceae family and is known for its traditional medicinal uses in Ayurvedic and folk medicine systems [5]. Cucurbitaceae is a large family of plants, also known as cucurbits, with 130 genera and 800 species. The name of the Cucurbitaceae family came from Latin, where the word corbismeans bottle or basket, cucurbits wereused in various ways in the past e.g., mature vegetables served as containers [6]. *Mukiamaderaspatana* (Linn) Cogn. Agmuki is known as common name for musumusukkai[7].

VERNACULAR NAMES

English : Madras pea pumpkin, Rough bryony

Tamil : Mosumosukai, Musumusukai

Hindi **:** Aganaki, Agumaki, Bilari

Sanskrit : Musimusikkay

Malayalam : Chitrati

MORPHOLOGY

Leaves	: Symmetrical ovate leaves, angularly shallowly to deeply 3-5 lobed, are 3-9 cm long.
Flowers	:Yellow in colour, 1 cm across, axillary, sessile clusters, calyx tube to 2 mm, villous; lobes subulate, erect, ovate-oblong, obtuse, petals 5, yellow,3 mm long, stamens 3, free, inserted at base of calyx tube; anthers oblong, ciliate, female flowers solitary or in clusters, ovary villous, berry 1.2cm across, globose, red, seeds lenticular, rugose.
Fruit	: Pea-sized fruits are green, turning to orange and then red, as they mature. Hairs are present over the plant.
Plant type	: It is an annually monoecious herb.
Distribution	: It is globally distributed throughout the tropics and subtropics. It was found in India at hilly region and Sri Lanka, mainly in Maharashtra, Kerala, Karnataka, and Tamil Nadu. It is a climber found in plain lands and in deciduous forests.
Harvesting and preserving	: Fruits can be directly collected from wild.
Season of collection	: Flowering: July to September, Fruiting from June onwards.
Propagation	: Seeds can be collected and sown in pots, allow them to germinate and plant in wild.
Method of storage	: Seeds for cultivation.
Parts used	: Leaf, root, stem, ripe fruit and unripe fruit.
Taste	:Astringent, Pungent [8]

CHEMICAL CONSTITUTIONS

Mukiamaderaspatana revealed the presence of alkaloids, flavonoids, tannins, saponin, steroids, terpenoids, cardiac glycerides, carbohydrates, phenolic compounds. The leaves contain mainly 2 Methylthiolane,S,Sdioxide, Diazene, bis(1,1-dimethylethyl),3-Buten-2-ol,4-methoxy-2-Butyn-1-ol,Di-chloroaceticacid,4-methylpentylester,2(Chloromethyl)-2-3-dihydro-4(1H)- quinolinone, Pantolactone compounds. Most of these phytochemicals plays as antimicrobial activity. [8]

MEDICINAL USES

The leaf decoction is also used to treat Hypertension and nasopharyngeal illnesses. *Mukiamaderaspatana* leaves are used to cure cough, asthma, mucus in the lungs, productive cough, chest burning, and rhinorrhoea, according to GunapadamMooligaivaguppu. The root is used to cure indigestion, vomiting, gastritis, Pitha illness, male infertility, and foul-smelling phlegm in the lungs. When taking Korosanai with Mukia's leaf juice, it may be an effective treatment for male infertility, odorous sputum in the lungs, vomiting, gastritis, Pitha illness, and indigestion. Make adai with soaked red rice, salt, and Mukia's leaf; it helps with TB, cough, and phlegm. The root's decoction or dry powder is beneficial for respiratory conditions and vomiting [9].

Asthma, cough, burning sensation, dyspepsia, flatulance, colic, constipation, ulcer, neuralgia, nostalgia, odontalgia, and vertigo are among the conditions for which the Ayurvedic medical system recommends the leaves and root of *Mukiamaderaspatana*[10].*Mukiamaderaspatana* is a leafy vegetable with possible anti-diabetic and vasoprotective properties [11].Mukia leaves are the main component of the Siddha preparation Kaphamarunthu[12].

MATERIALS AND METHODS

MINERAL ELEMENT

Determination of mineral elements

Five grams of the finely powdered material were weighed into a crucible after being oven-dried at 60°C. A greyish white ash was produced afterthe material was ignited for 6-8 hours at a temperature between 450°C and no more than 500°C in a muffle furnace. After cooling on an asbestos sheet, 5 cm^3 of 1N HNO3 solutions were applied to the sample. On a hot plate or steam bath, it was evaporated to dryness for 15 minutes at a low temperature of 400°C, producing a completely white or greyish white ash. After cooling on an asbestos sheet, 10cm^3 of 1N HCl was added to the sample, and the mixture was filtered into a 50 cm^3 volumetric flask. To make up the volume with 0.1N HCl solution, the crucible and filter paper were cleaned three times using an extra 10 cm^3amount of 0.1N HCl. The filtrate was kept in order to use an atomic spectrophotometer to determine the levels of Na, P, K, Ca, Mg, Fe, and Zn [13].

Quantitative Physical Analysis

Determination of Physicochemical parameters such as water-soluble ash, acid insoluble ash, loss on drying and powder analysis were done followed by African pharmacopoeia (1986) [14].

Qualitative Phytochemical Analysis

Preliminary phytochemical investigation for the presence of secondary metabolites such as glycoside, phenols, protein, flavonoids and saponin, by utilizing standard methods of analysis [14].

CHEMICAL TEST

Detection of flavonoids

Alkaline reagent test

To 2 ml of each extract, few drops of sodium hydroxide solution was added. Formation of intense yellow colour, which became colourless on addition of dilute HCl acid, indicated the presence of flavonoids.

Detection of alkaloids

Hager's test

2 ml of each extract was treated with Hager's reagent (saturated picric acid solution). Formation of an orange/yellow colour precipitate indicated the presence of alkaloids.

Detection of saponins

Froth test

2 ml each extract was diluted with 10 ml of distilled water and shaked for 15 minutes. Formation of layer of foam which remained for 10 minutes indicated the presence of saponins. **Detection of tannins**

To 2 ml each extract, 3 drops of 1% of ferric chloride was added. Appearance of blue green colour indicated the presence of tannins.

Detection of terpenoids

To 2 ml each extract, an equal amount of chloroform and then 2 ml of conc. H_2SO_4 along the sides of the test tube was added. Formation of a brown colour ring at the junction of two liquids indicated the presence of terpenoids.

Detection of carbohydrates

Fehling's test

To 2 ml of each extract, 2 ml of Fehling's A and B solution (each) was added and heated at 50^{o}C for 1 minute. Formation of red precipitate indicated the presence of reducing sugars.

Detection of phylobatannins

To 2 ml of each extract, 1 ml of diluted HCl solution was added. Formation of red precipitate indicated the presence of phylobatannins.

Detection of hydrolysable tannins

To 2 ml of each extract, 2 ml of ammonia solution was added. Formation of an emulsion indicated the presence of hydrolysable tannins.

Detection of glycosides

To 2 ml of each extract, 2 ml of diluted H_2SO_4 was added and heated at 50^{o}C for 2 minutes. Then 1 ml of 10% NaOH was added. To that, 5 ml of Fehling's solution A and B (each) were added. Appearance of brick red precipitate indicated the presence of glycosides.

Detection of cardiac glycosides

To 2 ml of each extract, an equal amount of glacial acetic acid was added. Then, 1 drop of 10% ferric chloride and 2 ml of conc. H_2SO_4 were added. Formation of three layers of colours (upper layer – Green, middle layer – brown and lower layer – violet) indicated the presence of cardiac glycosides [15].

High Performance Thin Layer Chromatography

HPTLC was performed on aluminium packed silica gel 60F254 HPTLC plates (Merck). The mobile phase was acetone - alcohol (1:1) for Ethyl alcohol extracts of both the samples. Samples were applied to the plates as sharp bands by means of CamagLinomat IV samples applicator. After drying the spots in a current of air the plats were placed in one trough of Camag twin trough glass chamber. The mobile phase was poured into the chamber left to equilibrate for 30 min. the plate was then developed until the solvent front had travelled a distance of 7 cm above the position of sample application. The plate was removed from the chamber and dried in a current of air. Detection was performed with a Camag TLC Scanner.

Chromatographic Condition Stationary Phase: HPTLC Aluminium plate percolated with silica gel 60F254.

Solvent system: Acetone - Alcohol (1:1)

Separation Technique: Ascending

Migration distance: 70mm.

Detection: UV.

Wave length :270 nm [16].

UV -Vis spectral analysis

The most crucial method and straightforward approach to verify the creation of nanoparticles is UV-Visible spectroscopy. The reduction of Ag+ ions into nanoparticles was seen using the UV-visible spectra. By periodically collecting the reaction mixture and using a spectrophotometer to scan the absorption maxima, the synthesized silver nanoparticles were verified. The colloidal sample's absorbance spectra were obtained using a spectrophotometer in the 200-800 nm range [17].

FT-IR spectral analysis

In order to determine the functional groups of the chemical components of the leaf extracts and AgNPs samples that were produced by applying these extracts, FT-IR analysis was carried out on both samples. FT-IR spectrometer measurements were made to analyze the bio-reducing agent found in each extract. For ten minutes, the diluted silver nitrate solution was centrifuged at 10,000 rpm. Following centrifugation, the separated silver nanoparticles were placed in the hot plate for 20 minutes. FTIR measurements were performed using the acquired dried materials. The range in which the spectra was recorded was 4000 cm-1 to 400 cm-1. The spectrometer was used for the FT-IR analysis [17].

PHARMACOLOGICAL ACTIVITIES

Hepatoprotective activity

The root extract contains methanol, which functions as a good heptotonic and lowers the levels of Alanine Transaminase (ALT), Serum Glutamic Pyruvic Transaminase (SGT), and Serum Glutamic Oxaloacetic Transaminase (SGOT) [18]. Accordingly, Mukia is recommended by earlier research for the treatment of liver disorders [19,20].

Anti-hyperlipidaemic activity

Activity against hyperlipidemia, the dried aerial portion of the plant's aqueous extract lowers the serum lipid level. It raises HDL while lowering TC, TG, LDL, VLDL, and PL. However, this plant can be used to treat atherosclerotic and coronary heart disorders [21].

Anti-hypertensive activity

Action against hypertension One of the risk factors for atherosclerosis and the etiology of cardiovascular illnesses is hypertension. The people may have coronary heart disease or stroke as a result of their hypertension. According to a prior study, ethanol in leaf extract lowers diastolic and systolic blood pressure [22]. Leaf extract contains coumarin, which also has hypotensive properties [23]. The leaf tea can lower both systolic and diastolic blood pressure and is recommended for 45 days to patients with uncontrolled systemic hypertension [24].

Anti-hyperglycaemic activity

Ethanol with insulinotropic properties is found in the aerial portion of *Mukiamaderaspatana*. It raises the production of glycogen and lowers the amount of blood glucose [25]. It stimulates the absorption of glucose by skeletal muscles while decreasing the liver's endogenous glucose production [26]. Glucose tolerance is marked by the extract as being equivalent to metformin [27].In contrast, the extract's α-glucosidase and α-amylase prevent the breakdown of starch [28].

Anti-inflammatory activity

Anti-inflammatory properties according to a prior study, methanol in leaf extract has anti-inflammatory properties and significantly improved laboratory and symptomatic parameters in a mild to moderate way with no negative side effects. Additionally, it possesses anti-rheumatic properties. It works well for managing rheumatoid arthritis [29].

Anti-microbial activity

Bacterial and fungal microorganisms are eliminated by ethanol extract. *Salmonella typhimurium, Pseudomonas aerigionosa, Staphylococcus aureus,*

Streptococcus pyogens, Escherichia coli, Staphylococcus epidermidis, Staphylococcus subflava, and *Staphylococcus subtilis* are all combatted by the extract. C. It possesses antifungal properties against Trichophyton rubrum and Candida tropicalis. The plant extract is a good way to stop the growth of bacteria and fungi [30].

Mosquito ovicidal, larvicidal, repellent potential

The ovicidal properties of *M. maderaspatana's* benzene, acetone, ethanol, hexane, and methanol fractions were investigated against the human vector mosquito Aedes aegypti. The iso-propanolic solution of crude acetone fraction, ethyl acetate fraction, hexane fraction, and methanol fraction at a concentration of 3.0 mg/cm2 on the dorsal surface of skin provides 100% protection against Aedes aegypti bites for up to 140 minutes. There have been reports of no notable skin irritation caused by plant extract [31].

Antifungal activity

The antifungal activity of crude extracts was determined using the disc diffusion method. The Petri dishes (diameter 60 mm) were prepared with Sabouraud's dextrose agar (SDA) and inoculated with test organisms. Sterile discs of six-millimetres width were impregnated with 10 µl of crude extract at various concentrations of 20–100 mg/mL, respectively. Prepared discs were placed onto the top layer of the agar plates and left for 30 min at room temperature for compound diffusion. The dishes were incubated for 24 h at 37°C and the zone of inhibition was recorded in millimetres [30].

RESULTS AND DISCUSSIONS

Mineral elements

Table 1: Mineral Element of *M. Maderaspatana*fruits [13]

Mineral Element	**M.*maderaspatana* fruits**
Sodium	164.28 ± 0. 03
Phosphorus	192.83 ± 0.41
Potassium	512.17 ± 0.05
Zinc	0.05 ± 0.10
Calcium	180.2± 0.33
Magnesium	38.7 ± 0.52
Iron	6.86 ± 0.08

Quantitative Physical Analysis

Table 2: Quantitative Physical Analysis [14]

Physical Constant	**% of values**
Water soluble ash	84.53%
Acid insoluble ash	3.08%
Loss on drying	12.53%

Qualitative phytochemical analysis

Table 3: Qualitative phytochemical analysis of leaves extract of*Mukiamaderaspatana*[15]

S. No.	**Phytochemicals**	**Aqueous extract**	**Methanol extract**	**Hydro-alcoholic extract**
1	Alkaloids	+	+	++
2	Flavonoids	+	++	++
3	Coumarin	-	+	++
4	Glycosides	+	+	++
5	Terpenoids	-	+	++
6	Tannins	+	+	++
7	Steroids	-	+	++
8	Saponins	-	+	+
9	Phenol	+	+	++
10	Anthraquinone	-	-	+

"+" indicates the presence of compounds
"-" indicates the absence of compounds
"++" indicates the high concentration of compounds

CHEMICAL TEST

Table 4: Chemical constituents of ethanol extract from *Mukiamaderaspatana*[15]

S.NO	TESTS	RESULTS
I	**Alkaloids**	
	i) Dragendroff`s test	+
	ii)Mayer`s test	+
	iii)Wagner`s test	+
II	**Flavonoids**	
	i)Lead acetate test	+
	ii)Ferric chloride test	+
	iii)Sodium chloride test	+
III	**Carbohydrates**	
	i)Fehling`s test	+
	ii)Benedict`s test	+
IV	**Saponins**	
	i)Emulsion test	+
	ii)Frothing test	-
V	**Tannins**	
	i)Bromine water test	-
	ii) Ferric chloride test	+

High Performance Thin Layer Chromatography

Table 5: HPTLC Profile of extracts of leaf and root of *MukiaMaderaspatana*[16]

S. No	Sample	Total number of spots	Number of major spots	Retention factor (Rf)	% of Area	% Yield (100gm)
1	Leaf	3	3	0.02 0.02 0.87	18.04 51.61 30.35	0.76 2.17 1.27
2	Root	5	5	0.02 0.20 0.56 0.75 0.87	11.24 11.14 51.61 12.20 30.40	2.10 1.92 2.17 2.10 5.23

Solvent system used: Acetone: Alcohol (1:1)
Amount applied:10μl of 20mg/ml Solution

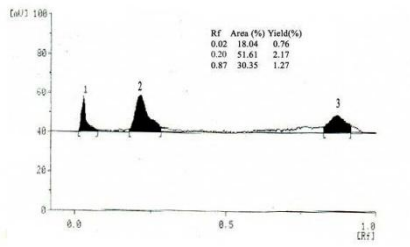

Figure 4: HPTLC Fingerprint leafof *Mukiamaderaspatana*

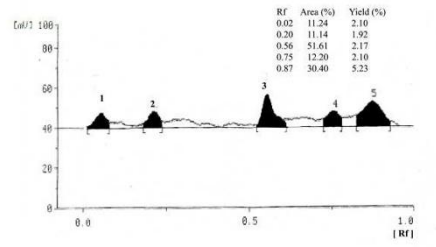

Figure 5: HPTLC Fingerprint root of *Mukia maderaspatana*

UV -Vis spectral analysis

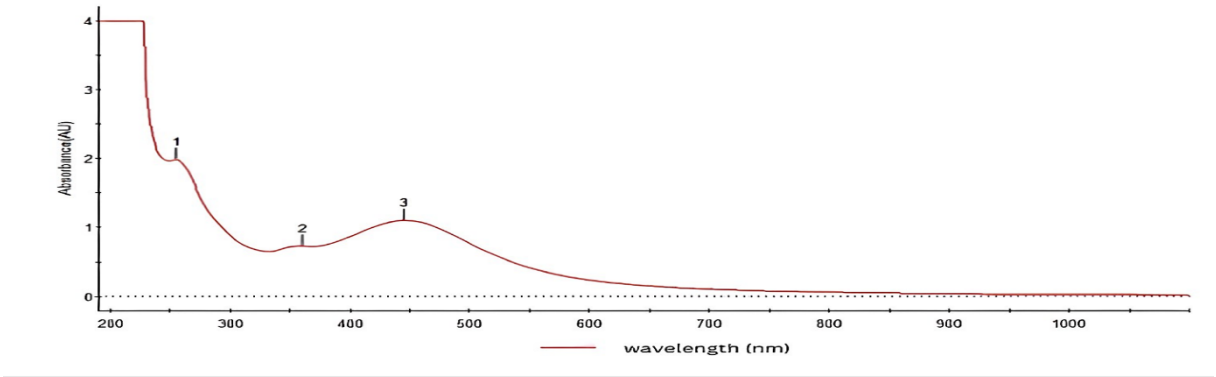

Figure 6: UV-Vis absorption spectra of green synthesized AgNPs (*Mukiamaderaspatana)* [17]

FT-IR spectral analysis

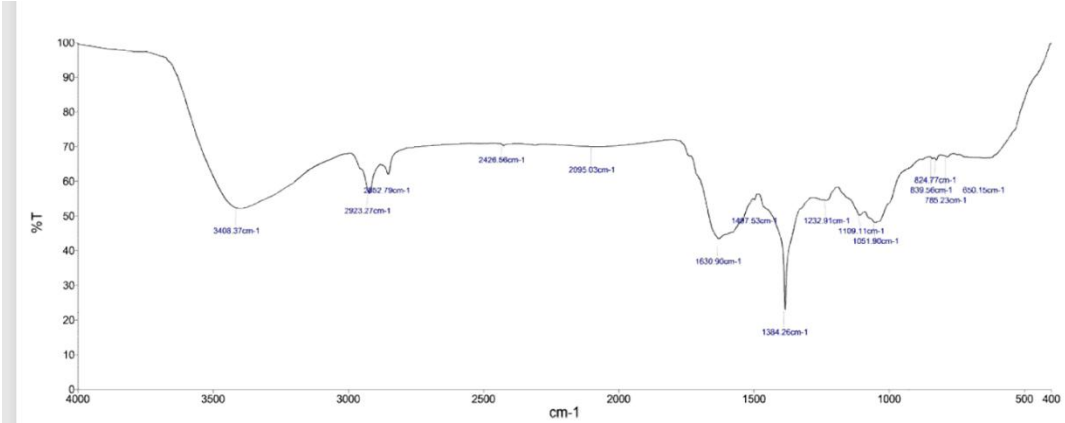

Figure7: FTIR spectra of green synthesized AgNPs (*Mukiamaderaspatana)* [17]

Table 6: Interpretation of FTIR Spectrum of*Mukiamaderaspatana*

S. No	Wave number (cm^{-1})	Assignment
1	2095.03	N=C=S stretching
2	1630.90	C=C stretching
3	1497.53	C=C stretching
4	1384.26	C-H bending
5	1232.91	C-N stretching
6	1109.11 & 1051.90	C-O stretching

PHARMACOLOGICAL ACTIVITES

Hepatoprotective activity

Table 7: Serum biochemical parameters of *Mukiamaderaspatana* on paracetamol induced hepatotoxicity

S No	Group	SGPT (units/ml)	SGOT (Units/ml)	Alkaline Phosphates (U/L)	Bilirubin (mg/dl)
1	Control	65.21±1.41	71.05±1.32	15.41±0.14	1.21±0.27
2	Standard silymarin (100mg/kg p.o.)	70.42±1.47*	79.11±2.02*	16.87±0.11*	1.29±0.19*
3	Paracetamol 2g/kg p.o.	128.21±2.37*	136.12±2.43*	56.21±0.20*	2.57±0.11*
4	Ethanolic extract 200mg/kg p.o.	98.12±0.78*	92.21±0.31*	41.26±0.31*	1.68±0.17*
5	Ethanolic extract 400mg/kg p.o.	74.21±0.12*	84.10±0.01*	21.03±0.03*	1.32±0.11*

(p.o means by mouth) **Values are expressed as mean ± Standard Error Mean.** **Data differed significantly at p<0.005 when compared with the normal control group in the relevant column. *Data differed significantly at p<0.005 when compared with the Paracetamol with the relevant (negative control) group in the relevant column [32].

Anti-hyperglycaemic activity

Table 8: In vitro glucose uptake by isolated rat hemi-diaphragm.

Group	Glucose uptake (mg/dl/g/30min)
Normal control	101.29 9.24*
Insulin control	112.41 9.14*
Mukia 50mg/ml	101.49 8.29
Mukia 100mg/ml	99.16 12.72
Insulin βMukia 100mg/ml	152.82 13.30*

Glucose uptake in the isolated rat hemi-diaphragm was carried out in vitro as described in the Methods section. Values are expressed as mean ± SD (n=8). *Results are significantly different among groups at $p<0.05$ [(33)].

Anti-inflammatory activity

Table 9: Inhibitory effect of whole plant methanolic extract of *Mukiamaderaspatana* on protein denaturation and proteinase activity [(34)].

Sample concentration (µg/ml)	Inhibition of protein denaturation (%)	Proteinase inhibition (%)
200	58.24	51.80
400	65.71	62.19

Anti-microbial activity

Table 10: Antibacterial activity of sample [(35)]

Plant extracts	Concentrations	Organisms/zone of inhibition (mm) Methanolic crude extracts		
		Escherichia coli	*Staphylococcus aureus*	*Enterococcus aerogenes*
Extracts	20 µg/mL	2	3	2
	40 µg/mL	4	4	4
	60 µg/mL	5	5	5
	80 µg/mL	6	6	6
	100 µg/mL	7	8	7
Methanol	10 µg/mL	8	0	0

Mosquito ovicidal, larvicidal, repellent potential

Table 11: Larvicidal effects of ethanolic extracts of *Heliotropium indicum* and *Mukiamaderaspatana*on larvae of A. Aegypti after a 24 h treatment at room temperature [(36)]

S. No	Concentration of the extract (mg/ml)	No. of larvae Dead/No. exposed (*H. indicum*)	No. of larvae Dead/ No. exposed (*M. maderaspatana*)	Mortality
1	Control	0/30	0/30	0
2	0.25	3/30	3/30	10
3	0.50	6/30	6/30	20
4	0.75	9/30	9/30	30
5	0.100	12/30	12/30	40
6	0.125	15/30	15/30	50
7	0.150	18/30	18/30	60
8	0.200	24/30	24/30	70
9	0.250	30/30	30/30	80
10	0.300	30/30	30/30	100

Antifungal activity

Table 12: Antifungal activity of the sample [(35)]

Plant extracts	**Concentrations**	**Organisms/zone of inhibition (mm) Methanolic crude extracts** Candida tropicalis	Candida albicans	Aspergillus Niger
Extracts	20 µg/mL	2	2	0
	40 µg/mL	4	4	2
	60 µg/mL	7	6	3
	80 µg/mL	5	7	4
	100 µg/mL	8	8	5
Methanol	10 µL/disc	0	0	0

CONCLUSION

Herbal plants play a major role in prevent and cure the diseases from the ancient times. The present review study of pharmacological potential of *Mukiamaderaspatana*shows the presence of active phytoconstituents possessing medicinal properties present in all parts such as leaves, seeds, stem, root and fruits. Plants are widely used by human due to its chemical potential and eco-friendly nature for treating various diseases and disorders. Chemicals present in plant differ in structure, mechanism of action and biological properties. Recent studies disclose that the plant possessing anti-hyperglycaemic, anti-hyperlipidaemic, antimicrobial, anti-anaemic, anti-inflammatory, anticancer, anthelmintic, antioxidant activities. The plant analysis involves the following methods such us HPTLC, UV-VISIBLE spectroscopy, FT-IR spectroscopy. It shows some medicinal uses according to Ayurvedha it treating cough, asthma, burning sensation. In Siddha medicine has treating fever, dyspnoea, abdominal disorders, hepatic disorders, cough and vomiting**.** By using these properties further study about the formulation and evaluation of *Mukiamaderaspatana.*

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