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Review article

HERBAL DRUG *SWIETENIA MAHAGONI* JACQ. - A REVIEW

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ABSTRACT

Swietenia mahagoni Jacq. commonly known as West Indian Mahogany belongs to the family Meliaceae and is a valuable tree of commercial and ethno pharmacological importance. The present review aims to compile the scattered information regarding the morphological features, chemical constituents and medicinal importance of the plant. The different parts of *S. mahagoni* Jacq. (Leaves, bark, fruits) are having both ethnobotanical and medicinal significance. Biological activities of the plant are due to the abundance of phenolic compounds including different terpenoids and limonoids. The dire need for such a review arises as the plant is included in the list of endangered species due to its high exploitation for timber utilization.

Key words: *Swietenia mahagoni,* morphological features, chemical constituents, ethnobotanical, phenolic compounds, terpenoids, limonoids, endangered species.

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INTRODUCTION:

Swietenia mahagoni Jacq. (Meliaceae) is a large, deciduous, and economically important timber tree native to the West Indies (Ref) and is commonly known as "Mahogany". This tree is mainly cultivated at tropical zones, such as India, Malaysia, and Southern China. It is a valuable species closely related to the African genus Khaya and the source of one of the most popular traditional medicines in Africa (Sahgal G. et al. 2009)

History (George Watt. 1972)**:**

Mahogany was brought to India by the British. In 1795, for the first time, several Mahogany trees were introduced as seedlings from Jamaica into the Botanic Gardens at Calcutta. In 1796 Dr. Roxburgh, in a letter to the sub-secretary to the Government of Bengal, mentions among other things that "the Mahogany plants sent out by the Court of Directors in 1794–95 thrive very well". By 1799, the plant got established in India. The trees continued to flourish but several trees were destroyed in the great cyclone of 1864. The trees were about 71 years of age, about 12 ft in girth at 4 ft above the ground. A log taken from them, after squaring and removal of sapwood, gave 169 cubic feet of timber.

In 1865, 183 pods, containing 8235 seeds were received from Jamaica by the Superintendent of the Government Botanical Gardens, Calcutta. From these, only 460 plants were produced, 338 were sent to Darjeeling to be planted, remaining 112 were kept in the botanical gardens. The plantations in Darjeeling proved to be a failure but the trees throve well in Bengal, from where it was sent to other places in India, Europe and Africa. From Bengal, the plant was propagated to Saharanpur gardens, Bombay, Yellapur and Madras.

Botanical classification (Wikipedia)**:**
Kingdom: Plantae
(unranked): Angiosperms
(unranked): Eudicots
(unranked): Rosids
Order: Sapindales
Family: Meliaceae
Genus: *Swietenia*
Species: ***Swietenia mahagoni***

Synonyms (life.ku.dk)**:** *Swietenia mahogoni* (L.) Lam., *Swietenia fabrilis* Salisbury, *Cedrus mahogany* (L.) Miller.

Vernacular/common names (life.ku.dk)**:**

English - Small leaved, West Indian, Spanish or Cuban mahogany
Spanish - *Caoba*
Bahamas - *Madeira*
Cuba - *Coabilla*
Dom.Rep. - *Caoba dominicana*
Fr., Haiti - *Acajou*
Bengali - *Mehgoni*
Kannada - *Hebbevu, Hiribevu, Davala, Mahaagani*
Tamil - *Mahaagoni, Seemainukku*
Telugu - *Maaghani, Mahaagani*

Habitat (life.ku.dk and www.dfsc.dk)**:**

S. mahagoni Jacq. is a humid zone species, with natural distribution in the Caribbean region (S. Florida, Bahamas, Antilles, Haiti and Jamaica). It has been extensively planted mainly in southern Asia (India, Sri Lanka, Bangladesh) and in the Pacific (Malaysia, Philippines, Indonesia and Fiji), and has been introduced into cultivation in West Africa.

Morphology of *Swietenia mahagoni* Jacq. (Anonymous 1976)**:**

Habit: a medium or large, evergreen tree, native to Central America, with a handsome spreading habit. But in India it is entirely deciduous or semi-deciduous. It has a buttressed base and in its native country, the tree reaches a height of 30 m and a girth of 4.5 m, but in India it attains a height of 18–24 m only.

Bark: rugose, grey-black or dark brown, flaked.

Leaves: alternate, exstipulate, clustered young leaves are of emerald shade, drying coppery

brown, 12–15 cm long, paripinnate; leaflets 2–4 pairs, opposite, very oblique, subfalcate, 5–6 cm long, 2–3 cm wide, lanceolate or ovate, apex acuminate, venation reticulate.

Inflorescence: axillary, 8–15 cm long, slender, pendulous panicles, shorter than leaves.

Fruit: capsule, 5–10 cm long, 3–6 cm in diameter, ovoid or oblong, 5-celled, splits from base to apex, valves thick, woody, surface coriaceous when mature.

Seed: 35–45 to each capsule, brownish, 4–5 cm long, compressed, crested and extended into a wing at the point of attachment.

Different species (Wikipedia)**:**

Swietenia humilis, Swietenia macrophylla, Swietenia mahagoni, Swietenia aubrevilleana

Among these, the first 3 species in the genus ***Swietenia*** are said to be important. They occur from Mexico to Brazil, and in the Caribbean region. The three species are poorly defined biologically, in part because they hybridize freely when grown in proximity (life.ku.dk).

- ***Swietenia humilis*: Pacific Coast Mahogany** - Pacific coast of Central America and Mexico; medium sized trees found at higher elevations (Anonymous 1976).
- ***Swietenia macrophylla*: Honduras Mahogany** - Atlantic coast of Central America, South America, south to Bolivia; leaves 3–8 pairs (usually), ovate-lanceolate, young leaves red or pink; flowers greenish in supra-axillary panicles; capsule shape - inverted club; bark greyish brown, smooth or sometimes rough, flakes into patches (Anonymous 1976).
- ***Swietenia mahagoni*: West Indian Mahogany** - Southern Florida, Cuba, Jamaica, Hispaniola; leaves 2–4 pairs, very oblique, subfalcate, old leaves coppery brown, young leaves emerald shade; flowers greenish yellow in axillary pendulous panicles; capsule ovoid; bark rough, grey black (Anonymous 1976).
- ***Swietenia aubrevilleana*** Stehle. & Cusin. is a putative hybrid between *S. macrophylla* and *S. mahagoni* (life.ku.dk).

Phenology (life.ku.dk)**:**

Pollination occurs by insects. Hybridisation is frequent, especially with *S. macrophylla* wherever the species grow together. Usually only one flower of the inflorescence develops into a fruit, the other flowers being aborted, even if fertilization has taken place. Development from flower to mature fruit takes from 8–10 months. Due to the long development time for the fruit, crop assessment can usually be undertaken several months before harvest. Flowering varies according to climate i.e. geographical site; it usually takes place shortly before the rainy season. *S. mahagoni* flowers in the Caribbean Islands between April and July and the fruits are mature 8–10 months later, between January and March. Mahoganies usually have regular annual flowering and fruiting from about 10–15 years of age.

Cultivation and propagation (life.ku.dk)**:**

S. mahagoni is difficult to start from cuttings, and usually is grown from seed. Mahogany's little winged seeds are spread by the wind and often give rise to numerous seedlings in the vicinity of mature trees. Pretreatment is generally not necessary but germination of stored low moisture content seed may be enhanced by soaking in water for 12 h. The seeds are sown in a bed of light sand in 3–7 cm deep furrows or holes or directly in containers. Germinating seeds should be under shade and kept moist. Seeds will germinate in 10–21 days. Germination is hypogenous. The seedlings are kept under shade until outplanting. The seedlings can be planted in the field when they are about 50–100 cm tall.

Collection/Harvest (life.ku.dk)**:**

The fruits are preferably collected from the trees just before opening or from the ground immediately after seed fall. Seed production varies according to site and year. A crucial factor for seed production is pollination efficiency, which may be erratic especially outside the natural area of distribution.

Threat status:

Under IUCN Redlist of Threatened species, *Swietenia humilis* (Pacific coast mahogany) is listed as Vulnerable species (Status Vulnerable A1cd ver 2.3), *S. macrophylla* (Large leaved mahogany) as Status Vulnerable A1cd+2cd ver 2.3, *S. mahagoni* (Small leaved mahogany) as Status Endangered A1ch ver 2.3 (iucnredlist.org)

Ethnomedicinal uses:

- In India, traditionally it is used for several medicinal purposes. The **seeds** and **bark** are used for the treatment of Hypertension, Diabetes, Malaria (Nagalakshmi MAH. *et al.,* 2001), and in Epilepsy as a folk medicine in Indonesia and India. (Kadota S *et al.,*1990)
- The **bark** is considered as an astringent and is taken orally as a decoction for diarrhoea, as a source of vitamins and iron, and as haemostyptic. The bark serves as antipyretic and tonic (Khare CP. 2007).
- Traditionally the **bark** decoction is used orally to increase appetite, to restore strength in cases of tuberculosis, to treat Anaemia, Diarrhoea, Dysentery, Fever and Toothache (Anonymous 1986).
- The **leaf** decoction is used against Nerve disorders, the seed infusion against Chest pain and a leaf or **root** poultice against bleeding. (Miroslav MG. *et al.,* 2005).
- The local people of East Medinipur (West Bengal), Balasore (Orissa) traditionally use the aqueous extract of its **seed** and **bark** for curing Psoriasis, Diabetes, Diarrhea and also used as an antiseptic in cuts and wounds (Pallab K *et al.,* 2011).
- Mahogany seeds have also been reported to have medicinal value for treatment of Cancer, Amoebiasis, Coughs and intestinal parasitism (Bacsal K *et al.,* 1997).

Other uses (life.ku.dk)**:**

S. mahagoni has potential use for large scale timber production plantations, especially in dry areas, due to the excellent timber quality. The wood density is 560–850 kg/m^3 at 15% moisture content. It is also used in agroforestry, for soil improvement and as an ornamental tree. It also yields a gum.

Chemical constituents

The proximate nutritional compositions of *S. mahagoni* Jacq. seed cake and the fatty acids present in the seed oil were investigated. The proximate nutritional composition of the seed cake were analyzed by the standard methods and it was found to contain moisture (14.37%), minerals (16.36%), fats (19.42%), crude fiber (19.60%), protein (8.76%) and carbohydrate (21.49%). The fatty acid composition of the oil was analyzed by Gas Chromatography and a total of 48 compounds were identified. The major constituents of the methylated fatty esters were linoleic acid (26.00%), elaidic acid (24.39%), stearic acid (14.32%), palmitic acid (12.97%), 10-methyl-10-nonadecanol (5.24%), ecosanoic acid (2.48%), 3-heptyne-2,5-diol, 6-methyl-5-(1-methylethyl) (2.03%) octadecanoic acid, 9,10,12-trimethoxy (1.90%); 1,3-dioxalane, 4 ethyl-4-methyl-2-pentadecyl (1.89%) and 2-furapentanoic acid (1.03%). It is evident from this study that the oil can be considered as a good source of unsaturated fatty acids. The oil is bitter in taste and considered as a moderate drying oil, which can be useful in different chemical industries for soap and dying (M. Mostafa *et al.,* 2011).

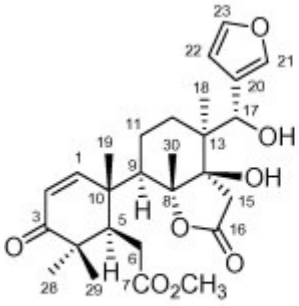
Physico-chemical characters of the seed oil were also determined and are as follows:

Parameters	Result
Colour	Brown
Moisture	24.60 %
Specific gravity at 30° C	0.9334
Acid value	10.92
Free fatty acid (FFA)	5.49 % (as oleic acid)
Saponification value	191.27
Iodine value	94.4
Unsaponifiable matter	1.49 %
Oil (dry basis)	53.75 %
Polenske value	0.35

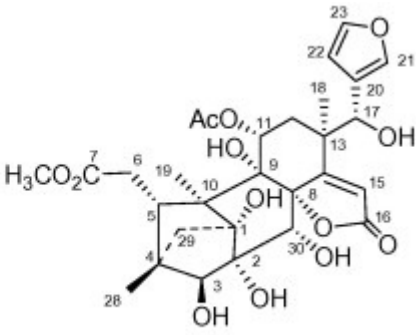
Solvent partitioning followed by column chromatography of the Methanolic extract of the seeds of *S. mahagoni* Jacq. afforded two limonoids, swietenolide (Fig. **1**) and 2-hydroxy-3-*O*-tigloylswietenolide (Fig. **2**). The compounds were identified by spectroscopic means. The antibacterial activity of these compounds was assessed against eight multiple-drug-resistant bacterial strains (clinical isolates) by the conventional disc diffusion method. While both compounds were active against all test organisms, compound (Fig. **2**) displayed overall more potent activity than compound (Fig. **1**.) (A.K.M. Shahidur Rahman *et al.,* 2009)

Two novel limonoids, swiemahogins A (Fig. **1**) and B (Fig. **2**) isolated from the twigs and leaves of *S. mahagoni* Jacq. are the first examples of andirobin and phragmalin types of limonoids, of which the D-ring *δ*-lactone is demolished and a rare γ-lactone is fused to the C-ring at C-8 and C-14. Their structures were elucidated by extensive spectroscopic means, and that of Fig. **1** was confirmed by single-crystal X-ray diffraction. (Yu-Yu Chen *et al.,* 2007)

Fig. 1 Swietenolide & Fig. 2. 2-hydroxy-3-*O*-tigloylswietenolide



1



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Pharmacological activity

Acute Toxicity Studies:

Methanolic extract of *S. mahagoni* Jacq. seed (SMSE) was injected i.p in increasing doses to mice. The LD_{50} (24 h) was calculated according to Ghosh M.N. It was found that SMSE was non-toxic up to 1.2 g/kg, i.p. body weight up to 24 h. The two doses of SMSE used in the study were 50 and 100 mg/kg i.p. **(**Ghosh S *et al.,* 2009)

According to another study conducted by the method of brine shrimp lethality assay, LD_{50} of oral acute toxicity for *S. mahagoni*

Jacq. seed methanolic extract (SMCM) is more than 2500 mg/kg. The oral LD_{50} value in this study suggests that the SMCM seed extract is a relatively nontoxic plant. The results of the study concur with the use of this plant by traditional healers as traditional medicine.(Geethaa Sahgal *et al.,* 2010)

Anti-microbial activity (Sahgal G *et al.,* 2009)**:** The study was designed to evaluate the antibacterial activities of *S. mahagoni* Jacq.crude methanolic (SMCM) seed extract. The antimicrobial activity of the oily extract against Gram-positive, Gram-negative, yeast and fungus strains was evaluated based on the inhibition zone using disc diffusion assay, minimal inhibition concentration (MIC) and minimal bactericidal concentration (MBC) values. The crude extract was subjected to various phytochemical analyses. The demonstrated qualitative phytochemical tests exhibited the presences of common phytocompounds including alkaloids, terpenoids, antraquinones, cardiac glycosides, saponins, and volatile oils as major active constituents, while test for tannins, flavonoids and steroids demonstrated negative responses. The SMCM seed extract had inhibitory effects on the growth of *Candida albicans, Staphylococcus aureus, Pseudomonas aeroginosa, Streptococcus faecalis* and *Proteus mirabillase* and illustrated MIC and MBC values ranging from 25 mg/ml to 50 mg/ml.

Anti-diabetic activity (SMM Mahid-Al-Hasan *et al.,* 2011)**:** The study was performed to investigate the blood glucose lowering effect of *S. mahagoni* Jacq. seeds in experimentally induced diabetic rats. Administration of ethanolic extract of *S. mahagoni* Jacq. seeds to normal rats produced no significant change in the blood glucose. Administration of ethanolic extract of *Swietenia mahagoni* seeds in alloxan induced Diabetic rats (120 mg/kg body weight) produced a significant reduction in blood glucose level as compared to diabetic control. Histological examination of pancreas showed destruction of beta cells in Islets of pancreas in control group whereas retaining of islets and few degranulations of beta cells of pancreas was found in the group treated with *S.mahagoni* Jacq. seed extract. These observations and results provided the information that ethanolic extract of *S. mahagoni* Jacq. seeds has hypoglycemic effect in experimentally induced diabetic rats.

Another comparative clinical study on the seeds of *S. mahagoni* had shown promising results with the seed powder encapsulated into 500 mg capsules and administered as 1 capsule twice a day after food for 60 days. The study was in comparison with another Ayurvedic classical herb *Syzygium cumini. S. cumini* and *S. mahagoni* showed definite demonstrable *Madhumehahara* (anti-diabetic) action as observed by clinical study. The drug *S. mahagoni* was more effective in all the parameters except in *Pipasa* (Polydipsia) where *S. cumini* showed better results. (Khare Divya *et al.,* 2012)

Antidiabetic, antioxidative (Geethaa Sahgal *et al.,* 2009)**, and antihyperlipidemic** activities of aqueous-methanolic (2 : 3) extract of *S. mahagoni* Jacq. seed was studied in streptozotocin-induced diabetic rats. Feeding with seed extract (25 mg in 0.25 ml distilled water−1100 gm b.w./1rat/1 day) for 21 days to diabetic rat lowered the blood glucose level as well as the glycogen level in liver. Moreover, activities of antioxidant enzymes like catalase, peroxidase, and levels of the products of free radicals like conjugated diene and thiobarbituric acid reactive substances in liver, kidney, and skeletal muscles were corrected towards the control after this extract treatment in this model. Furthermore, the seed extract corrected the levels of serum urea, uric acid, creatinine, cholesterol, triglyceride, and lipoproteins towards the control level in this experimental diabetic model. The results indicated the potentiality of the extract of *S. mahagoni* seed for the correction of diabetes and its related complications like oxidative stress and hyperlipidemia.(Debasis De et. al 2011)

Antioxidant and Antidiabetic activity (Subhadip Hajra *et al.,* 2011 and Siva Prasad Panda *et al.,* 2010)**:** The ethanolic extract of *Swietenia mahagoni* seeds showed DPPH

radical scavenging activity at concentrations of 10, 50, 100, 250 and 400 µg/ml. The extract also showed significant hydroxyl radical scavenging activity. It significantly inhibited nitric oxide radical and ferric reducing power in a concentration dependent manner. All the results were compared with that of standard drug Butylated Hydroxyl Anisole (BHA). The total phenolic content of seeds extract was found to be 1µg/mg of catechol equivalent when measured by Folin- Ciocalteau reagent. The extract showed relatively better antidiabetic activity of 72.53, 70.33 and 70.33% with respective concentration of 2, 20 and 200 µg/ml when measured by amylase inhibition assay. Amylase catalyses the hydrolysis of α -1, 4-glucosidic linkages of starch, glycogen and various oligosaccharides and glucosidase further breaks down the disaccharides into simpler sugars. The assay showed that the extract contains amylase inhibitory compounds. This inhibition of the amylase activity, in the digestive tract of humans, might be effective in controlling diabetes by diminishing the absorption of glucose. These observations support the use of *S. mahagoni* Jacq. seeds as a natural antioxidant and antidiabetic agent.

PPARγ agonistic activity (Li DD *et al.,* 2006)**:**

The seed of *S. mahagoni* Jacq. is a natural agonist of peroxisome-proliferator activated receptor (PPARγ). The functions of these PPARγ receptors after activation by drugs include an increase in lipid and cholesterol metabolism, adipocyte differentiation, and improvement in insulin sensitivity. It has been demonstrated that PPARγ is the receptor of the thiazolidinedione (TZD) class ligands. Among the TZD type antidiabetic drugs, Rosiglitazone and Troglitazone are potent adiopocyte-differentiating agents, which activate ap-2 gene expression in a PPARγ- dependent manner.

Cytotoxic effect (Mohammad Ahsanul Akbar *et al.,* 2009)**:**

The seed extract and its dichloromethane and pet-ether fractions exhibited the most significant cytotoxic properties. The moderate cytotoxic activities were showed by bark extract, methanol fraction of bark extract, leaf extract and pet-ether fraction of bark extract.

Anti-inflammatory, Analgesic and Antipyretic study (Ghosh S *et al.,* 2009)

S.mahagoni Jacq. seed methanolic extract (SMSE) showed significant anti-inflammatory and analgesic activity in experimental animals at doses of 50 and 100 mg/kg i.p. The anti-inflammatory effect of SMSE was observed in acute (carrageenan and arachidonic acid-induced paw edema in rat and croton oil-induced ear inflammation in mice), sub-chronic (cotton pellet-induced granuloma in rat) and chronic (Freund's complete adjuvant-induced polyarthritis in rat) models of inflammation. Since SMSE inhibited edema similar to that of the dual-blocker BW755C in arachidonic acid induced-paw edema in rat and since indomethacin failed to show any significant inhibitory effect in this model, it is plausible that SMSE reduced inflammation by blocking both the lipo-oxygenase and cyclo-oxygenase pathways of arachidonic acid metabolism. The observation that SMSE significantly reduced inflammation in the Freund's adjuvant-induced polyarthritis in rat reveals that SMSE possesses anti-arthritic activity as well. It is interesting to note that in all models of inflammation, the effect produced by 100 mg/kg i.p. of SMSE was either more than or comparable to that produced by 100 mg/kg i.p. of ibuprofen, the standard NSAID.

While SMSE reduced acetic acid-induced writhing significantly it also showed analgesic activity in tail clip and tail flick models of analgesia in a time and dose-dependent manner in comparison to ibuprofen, the reference anti-inflammatory agent. The extract did not possess significant antipyretic activity.

Effect on normal peritoneal cell: (Ghosh S *et al.,* 2009)

It was observed that the average number of macrophages was increased after *S. mahagoni* seed methanolic extract treatment in a dose-dependent manner as compared to the control.

The linear increase was effective up to 24 hours and then on the 48 th hour the count came down. Though the actual role of SMSE in the enhancement of peritoneal cell count and macrophage count cannot be explained at the present juncture, it is possible that SMSE may also alter the immune response along with the anti-inflammatory effect.

Anti-tumour activity: (Ghosh S *et al.,* 2009)

There is a close relationship between inflammation and cancer. It has been reported that tumor promoters recruit inflammatory cells to the application site and cancer development may also act by aggravating inflammation in the tissue and vice versa and that inflammatory cells are capable of inducing genotoxic effects. So it is likely that *S. mahagoni* Jacq. methanolic extract possesses anti-tumor activity as well.

Anti-fungal activity: (Sahgal, G *et al.,* 2012**)**

S. mahagoni Jacq. crude methanolic (SMCM) seed extract was investigated for the antifungal activity against *Candida albicans.* The antifungal activity was evaluated against *C. albicans* via disk diffusion, minimum inhibition concentration (MIC), scanning electron microscope (SEM), transmission electron microscope (TEM) and time killing profile. The SEM and TEM findings showed that there are morphological changes and cytological destruction of *C. albicans* at the MIC value. Animal model was used to evaluate the *in vivo* antifungal activity of SMCM seed extract. The colony forming unit (CFU) was calculated per gram of kidney sample and per ml of blood sample respectively for control, curative and ketaconazole treated groups. There was significant reduction in the CFU/ml of blood and CFU/g of kidney in the SMCM treated group. This indicated that the extract is effective against *C. albicans in vitro* and *in vivo* conditions.

In another study, Isolation and characterization of B,D-seco limonoids from *S. mahagoni* Jacq. was done. Seven limonoids from *S. mahogani* were tested for antifungal activity against the groundnut rust *Puccinia arachidis*. 6-acetylswietenine and 6-acetyl-3-tigloylswietenolide from *S. mahogany* Jacq. effectively reduced the number of rust pustules on detached groundnut leaves. (T. R. Govindachari *et al.,* 1999)

Anti-ulcer activity:

A study was performed to evaluate the anti-ulcer activity of *S. mahagoni* Jacq. ethanol leaf extract against ethanol-induced gastric ulcer. Results showed that rats pre-treated with leaf extract of *S. mahagoni* Jacq. before being given absolute alcohol had significantly reduced areas of gastric ulcer formation compared to rats pre-treated with only Carboxy Methyl Cellulose (ulcer control group). Moreover, the leaf extract significantly suppressed the formation of the ulcers and it was interesting to note the flattening of gastric mucosal folds in rats pre-treated with *S. mahagoni* Jacq. extract. It was also observed that protection of gastric mucosa was more prominent in rats pre-treated with 500 mg/kg plant extract. Ethanol-induced mucosal damage was significantly and dose dependently reduced in the size and severity by pretreatment of the animals with *S. mahagoni* Jacq. leaf extract. (Salmah Al-Radahe1 *et al.,* 2012)

PAF inhibition activity:

The ether extract from the seeds of *S. mahagoni* Jacq. was found to inhibit platelet-activating factor (PAF)-induced platelet aggregation. Systematic separation of the extract afforded twenty eight tetranortriterpenoids related to swietenine and swietenolide. Among them, several new compounds, named swietemahonin A, D, E, and G and 3-O-acetylswietenolide and 6-O-acetylswietenolide, showed a strong inhibition against PAF-induced aggregation in vitro and in vivo assays. (Ekimoto H et al 1991) Swietemahonins and Swietenolide inhibited blood platelet aggregation, Swietemahonin A showed most potent (97.4% inhibition) anti-PAF activity (Kadota S *et al.,* 1990).

CONCLUSION

S. mahagoni Jacq. is a commonly used herb in Folklore medicine. This review supports all updated information on its botanical aspects, phytochemistry, pharmacological activities and traditional uses. Its chemical markers or target molecules have been identified and separated. The chemical entities of this plant have been proved for their Anti-bacterial activity, Anti-microbial Activity, Anti-oxidant activity, Anti-ulcer activity, Anti-fungal activity, Anti-inflammatory, Analgesic activity, Hypoglcemic activity, Platelet Aggregation Inhibitors activity etc. These scientifically proved activities can be related with the traditional usage of the plant.

Thus *S. mahagoni* Jacq. is one of the most important plants that has a tremendous scope for research in future. The novelty and applicability of this valuable species are hidden. Such things should be overcome through extensive scientific research. The drug may be a good candidate for developing a safe, tolerable, and promising neutraceutical treatment for the management of many diseases. Though the plant is widely used for the treatment of a large number of human ailments, being an endangered species, our prime motive is to conserve such valuable plant species from going extinct.

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