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REVIEW ARTICLE.....!!!

A REVIEW ON BAUHINIA TOMENTOSA LINN

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KEYWORDS:

Bauhinia TomENTOSA
Linn, Pharmacognostical
properties,
Phytochemical studies,
Pharmacological effects
and Medicinal uses.

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ABSTRACT

Bauhinia TomENTOSA Linn is a genus of more than 200 species of flowering plant in the sub family of Cesalpinoideae of the large flowering plant family Fabaceae .The various parts of plant like flowers, stem bark, stem, leaves, fruits, seeds, roots and root bark are used in India for cure of variety of diseases. The plant is reported to contain Amino acids, Proteins, Fatty acids, Minerals, Alkaloids, Phytosteroids, Flavanoids, Saponins, Tannins, Phenolic compounds, fixed oils, and fats. The proved Biological activities are Anti- oxidant, Anti- bacterial, Anti-fungal, Anti-hyperglycemic and Anti-lipidemic, Anti-ulcer, Immunomodulatory and Anti- inflammatory activities. It is now considered as a valuable source of unique natural products for development of medicines against various diseases and also for the development of industrial products. This review represents a detailed survey of the literature on Pharmacognosy, Phytochemistry, Therapeutic uses, and Pharmacological activities of *Bauhinia TomENTOSA Linn*.

Bauhinia Tomentosa:

Synonyms : *Bauhinia binata* Naves , yellow bauhinia.

Family : Fabaceae.

Scientific names : *Bauhinia Tomentosa* Linn

History:

The exploration of the chemical constituents from plants, Pharmacological and Phytochemical screening would provide the basis for developing the new lead molecules in strategic favour of natural product drug discovery.

Bauhinia tomentosa commonly known as yellow bell orchid tree belongs to Fabaceae family is one of the best , versatile and most commonly used household remedy for many manifestations. The generic name commemorates the Bauhin brothers Jean and Gaspard the Swiss Botanists ; the two lobes of the leaf exemplify the two brothers. The specie name “*tomentosa*” means hairy and it refers to the velvety/hairy Pods. This plant is widely used in curing different diseases.

Habitat:

These plants found along the coastal strip from Southern Kwazulu-Natal to Maputo land, Mpumalanga, Mozambique, Zimbabwe, Tropical Africa, India and Srilanka. It is found in the plain southwards of Delhi in the peninsular region, West Bengal.

Taxonomy:

Kingdom	:	Plantae-Plants
Subkingdom	:	Tracheobionta-Vascular plants
Superdivision	:	Spermatophyta - Seed plants
Division	:	Magnoliophyta - Flowering plants
Class	:	Magnoliopsida - Dicotyledons
Subclass	:	Rosidae
Order	:	Fabales
Family	:	Fabaceae - Pea family
Genus	:	<i>Bauhinia</i> L. - <i>Bauhinia</i>
Species	:	<i>Bauhinia Tomentosa</i> L. - St. Thomas tree

Common names:

Bauhinia tomentosa has different names in various languages.

English : St. Thomas Tree, Yellow Bauhinia, Butterfly Tree, Orchid tree, Hairy bauhinia, Mountain ebony, Yellow tree bauhinia, Camel foot tree.

Tamil : kanjana

Sanskrit : Phagulu , pita kanchana

Telugu : Adavimandaram

Hindi : kural, Gurial, Padrian, Gwiar, kachnar, kolar

Malayalam : kerbau, kupu-kupu, Akbar tapak .

Plant Description:

Bauhinia Tomentosa is usually a scrambling, many-stemmed shrub or small tree reaching 4 m (max. 8) in height, the branches often drooping, with many slender twigs. Bark grey and smooth or slightly hairy on young branches, becoming brown and smooth on the older stems.

Leaves deeply divided for almost half their length, with a small apical appendage between the lobes; each lobe is oval to almost elliptic, most often small about 2.5 x 2.5 cm, but may be up to 8 cm, pale fresh green; apex of each lobe broadly tapering; base of the whole leaf shallowly lobed; margin entire, petiolate, leaf stalk 10 to 30 mm long.

Flowers bell-shaped, up to 7 cm long, beautiful and distinctive, pendulous, solitary, with large, lemon-yellow petals, 1-3 of which have a dark maroon patch at the base and turning a veined reddish brown with age.

Fruit a woody pod, slender, pale brown, velvety, pointed, 10-11 x 1.5-2 cm, dehiscent, splitting on the tree to release 6-12 seeds. Seeds 7- 8.5 x 5.5 -7 x 2-3 mm, ovate, compressed, glossy, reddish brown, somewhat rugose to nearly smooth, with V-shaped marginal hilum, often bearing an apical, hook-shaped funicular remnant.

General description:

Botanical name	:	Bauhinia Tomentosa Linn
Common name	:	Yellow bell bauhinia
Use	:	Outdoors
Indigenous/ Exotic	:	Indigenous
Ever green/Deciduous	:	Ever green / Deciduous
Plant type	:	Shrub
Flower colour	:	Yellow
Foliage colour	:	Green
Best season	:	Summer to autumn
Light	:	Sun
Hardness	:	Semi-hard
Attributes	:	Attracts butterflies.
Height	:	2 m
Spread	:	3 cm

Botanical differences between *Bauhinia Tomentosa*

Characters	B. Tomentosa	B. Variegata	B. Racemosa
Plant	Many stemmed shrub or small tree	A medium –sized deciduous erect tree	A small, crooked bushy tree
Leaves	Oval to elliptical	Connate, ovate auxiliary	Leaf blade broadly orbicular
Flowers	Bell-shaped , petals have dark maroon patch in centre	White or pink, upper most petal darker	White buds, Obovoid, Puberulent
Fruits	Woody pod, slender, pale brown, velvety	Flat, dehiscent pods	Valves woody, glabrous
Seeds	Ovate, compressed, Glossy, reddish brown, apical	Flat 10-15 seeds	Dark brown 12-20 ellipsoid
Flowering	December – March	January – April	April - May
Fruiting	Jan – June	-	June - August

Useful parts : Roots , Bark , Flowers and Leaves.



Whole plant

Leaf

Flower

Fruit

Seeds

Therapeutic uses :

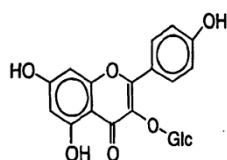
The dried leaves, flowers, roots, fruits, and seeds of *Bauhinia Tomentosa* are medicinally used in various diseases.

- ✓ The root bark is used internally for conditions of the large intestine, decoction of the root bark is used as vermifuge, abdominal troubles and as an Antihelmintic, An infusion of the root bark is used as an external application to inflamed glands, abscesses and skin conditions
- ✓ An infusion of the stem bark used as astringent gargle.
- ✓ Flower is used as remedy for Dysentery and Diarrhoea.
- ✓ The fruit is said to be diuretic, and an infusion of the rind is used as astringent gargle.
- ✓ The seed is eaten as a tonic, aphrodisiac, and paste of the seed made with vinegar is used as a local application to the wounds produced by venomous animals.

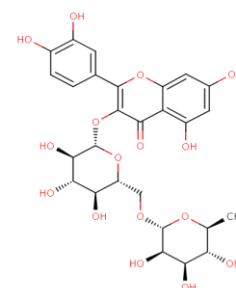
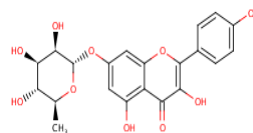
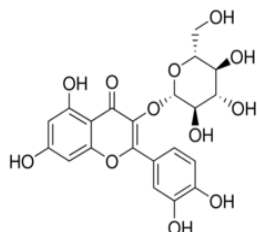
- ✓ The Leaf is an ingredient in a plaster applied to abscesses.

Chemical constituents:

Leaves: The Phytochemical analysis of ethanolic extract of dried leaves of *Bauhinia Tomentosa* contains Phytoconstituents called kaempferol-7-0-rhamnoside, kaempferol-3-0-glucoside, quercetin-3-0-glucoside and quercetin-3-0-rutinoside.



(1)



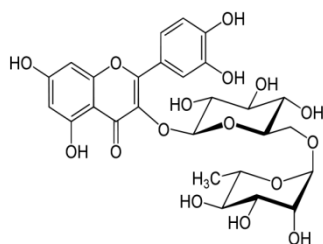
Kaempferol-3-0-glucoside

quercetin-3-0-glucoside

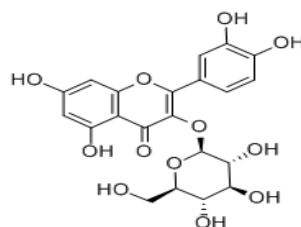
kaempferol-7-0-rhamnoside

quercetin-3-0-rutinoside

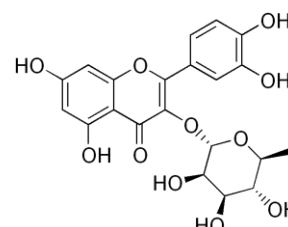
Flowers : Phytochemical screening of crude extract of flowers yielded Carbohydrates , Glycosides , Alkaloids , Phytosteroids , Flavanoids , Saponins , Tannins , Phenolic compounds and fixed oils. Flower contains Flavanoids , Isoquercitrin 6% , Rutin 4.6% , and a small amount of Quercitrin.



Rutin



Isoquercitrin



Quercitrin

Seeds : Seeds yields a fatty oil called ebony oil , Protein - Pentosan , water soluble mucilage and Saponins.

Bark : Bark yields a fiber

Roots: Roots contains Carbohydrates , Reducing sugars, Saponins , Tannins , Phenolics , and Flavonoids.

PHARMACOLOGICAL STUDIES

• **Antimicrobial / Roots:** Swarnalatha Dugasani reported that extracts of *B tomentosa* and *B vahlii* roots were tested for their antimicrobial activity against bacterial and fungal strains. The activities of the extracts were attributed the presence of flavonoids and tannins. [18]

• **Antimicrobial / Flowers:** V. kishore kumar reported that *Antimicrobial activity was observed on the ethanolic extract of flowers*. Good activity was observed against *S. aureus*, *Strep faecalis*,

Bacillus linchini formis, Shigella soneii, Kleb pneumonia, E coli, with good activity against fungi - Aspergillus niger, Candida albicans. [24]

- **Anti-Lipidemic / Anti-Hyperglycemic:** Rangaswamy .M reported the *Study on the ethanolic extract of BT flowers on streptozotocin-induced diabetic rats* showed significant reduction of plasma glucose, total cholesterol, LDL, VLDL, triglycerides within increase in HDL. [19]

- **Cytotoxicity / Antioxidant:** M.A.Aderogba worked on *Study isolated four flavonol glycosides: kaempferol-7-O-rhamnoside, kaempferol-3-O-glucoside, quercetin-3-O-glucoside and quercetin-3-O-rutinoside*. Compound 3 had higher antioxidant activity than L-ascorbic acid. Compound 4 displayed slight cytotoxicity to bovine dermal cells. [20]

- **Antioxidant / Immunomodulatory / Anti-Inflammatory:** NNarayanan Kannan worked on *the Study of methanolic extract in mice showed immunomodulatory effects and nitric-oxide radical scavenging activity*. Also, an anti-inflammatory effect was evidenced by significant reduction in acute inflammation of paw edema induced by carrageenan and formalin. [22]

- **Anti-Ulcer Activity:** L.N.Patidar reported *on Study that evaluated the anti-ulcer activity of B. tomentosa using alcohol-induced and aspirin-induced ulcer models in rats*. Results showed an aqueous extract of leaves showed significant dose-dependent anti-ulcer activity. Omeprazole was used as standard in both models. [27]

- **Anti-Diabetic Activity:** Ajit kiran kaur reported *the Study that evaluated the antidiabetic activity of an ethanolic extract of roots in normal and alloxan induced diabetic rat*. Results showed significant antidiabetic activity compared to glibenclamide.[29]

- **Antibacterial Activity:** Rahman.S reported that *Study that evaluated the antibacterial activity of leaves of B. tomentosa against some human pathogenic bacteria*. An ethanolic extract showed significantly higher inhibitory effect compared to an aqueous extract on tested organisms. [30]

- **Roots / Phytochemicals :** Girendra kumar gautam *Studied on ethanolic extract of roots yielded the presence of carbohydrates, reducing sugars, saponins, tannins, phenolics, and flavonoids*. [23]

S.no	Reported activity	Author	Parts used	Model used
1.	Anti-diabetic	Ajit kiran kaur et al	Roots	Alloxan induced diabetis
2.	Antibacterial and Antifungal	Gopalakrishnan et al	Flowers	Microorganisms using filter paper disc method
3.	Antimicrobial	Swarnalatha dugasani et al	Roots	Three fungi strains using microdilution method
4.	Antiulcer	L.N Patidar et al	Leaves	Alcohol induced, aspirin induced ulcer model
5.	Antihyperglycemic and Antilipedimic	RangaswamyM et al	Flowers	Streptozocin induced diabetis
6.	Antioxidant	Swarnalatha. D et al/	Stem bark and roots	Oxidative damage was studied by assessing parameters.

SUMMARY AND CONCLUSION:

In the present article we had a review on the relevant properties such as Pharmacognostical, Phytochemical and Pharmacological information on Bauhinia Tomentosa. The critical analysis of the literature revealed that this plant contains different active constituents which are responsible for various biological activities. The present review of literature revealed that the plant is having Antidiabetic, Antibacterial and Antifungal activity, Antiulcer activity, Antimicrobial activity, Anti-inflammatory activity, Antioxidant and Immunomodulatory activities.

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