

Ethnobotanical, Phytochemical Aspects and Benefits of *Madhuca Indica* (*Bassia Latifolia* Roxb.)

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Abstract: This article discussed the importance of plant *Madhuca indica* (*syn. Mahua*) belonging to family sapotaceae. It is widely distributed in Andhra Pradesh, Gujarat, Madhya Pradesh, Odisha, Chhatisgarh, Jharkhand, Bihar, Uttar Pradesh, Dehradun and karnatka. Mahua is valued for its seeds. Mahua fruits are used as vegetable and widely consumed by the tribes of western Odisha. Mahua has various health benefits and use in the treatment of various diseases like Bronchitis, Rheumatism, Diabetes etc. Except medicinal uses mahua has other uses also as in timber industry, as a soil improver etc. Mahua tree gives significantly high quantity of oil. The oil is rich in PUFA and has desirable level of oleic and stearic acid 60 to be used as cocoa substitute in confectionary products alternative fuel options for diesel. The flowers are used as vegetable, for making cake, liquor etc.

Keywords: Mahua, Sapotaceae, PUFA.

Introduction: As we all of know that the plants plays a very important role in our life and the universal role of plants is treatment of disease.

Plants are rich in source of drugs and vast reservoir of chemicals and hence great importance in Pharmaceutical industries. Many drugs which are used in Ayurveda and Unani system are from plant source.

Now a days the world health organization is focusing his attention to encourage the use of herbal medicines. Herbal medicine can be defined as those products which are simply derived from any part of plant. The knowledge of traditional medicine put the light on the discovery of new and potent medicines.

Madhuca Indica (*syn. Mahua*) a plant of Indian origin having tremendous therapeutic and potent use but due to unawareness of people it is not fully utilized belonging to family sapotaceae. It is a fast growing tree that grows to appox. 20 metres in height, possesses evergreen or semi-evergreen foliage. It is a large deciduous tree growing widely under dry tropical and sub tropical climate conditions. It is widely distributed in Andhra Pradesh, Gujarat, Madhya Pradesh, Odisha, Chhatisgad, Jharkhand, Bihar, Uttar Pradesh, Dehradun, Saharanpur, Chota Nagpur, North circars, Deccan and Karnataka. Mahua is valued for its seeds which have different types of oils and for its flowers which are mostly used for production of alcohol and sweet candy. This is a estimate that about 0.15 million tones of seeds of mahua tree are produced in India.

Family: Sapotaceae

Vernacular names: English (Indian Butter tree), Hindi (Mahua, mohwa, mauwa), Bangali (mahwa, Maul, Mahwla), Marathi (mahawa, mohwra) Gujrati (Madhuda), Telgu (Ippa), Tamil (illupei, Ewpa), Kannad (tuppe) Malyalam (poonam, ilupa) Oriya (Mahula, Moha, Madgn).

Cultivation and Collection: This plant can be cultivated or self sown. Flowers of this tree are medium sized and flowering occurs during the season of March to April, in every year.

Morphology or Identical features: It is a medium to large sized deciduous tree, with a short, hole and large rounded crown found throughout the green forest part of India upto altitude of 1,200 meter and 12 to 15 meter height.

- Bark are thick dark colored crack,
- Inner bark dark red,
- Trunk short
- Branches numerous
- Leaves are 10-30 cm long and thick,
- Clusters glabrous near end of branches,
- Epileptical or elliptic oblong 7.5-23 cm into 3.8-11.5cm
- Flowers are small and fleshy
- Dull or pale white in colour
- Fruits are 2-6 cm long, fleshy and greenish.

Mahuwa Flowers

The mahuwa flower is edible and is a food for tribals. They are also used to make syrup for medicinal purposes.

They are also fermented to produce the alcoholic drink *mahuwa*, a country liquor. *Mahuwa* is an essential drink for tribal man and women during celebrations. The main ingredient used for making drink are *chhowa gud* (granular molasses) and dried mahuwa flowers.

The liquor produced from flowers is largely colourless, with a whitish tinge and not very strong.

Besides these things Mahuwa has several pharmacological and physiological properties.

Phytochemical or Phytochemistry of MADHUCA INDICA

The therapeutic value of the plant depends on the active constituents present inside the different part of the plant, which may be present in the small or large quantity. The leaf of the mahua tree contain saponin, an alkaloid and glucoside. Sapogenin and other basic acid are found in seeds. Various studies of plant tell us that Mahau include characterization of Sapogenin, triterpinoids, steroids, saponin, flavonoids and glycosides, madhucic acid, madhushazone, 4 new oleanane type triterpene glycosides and madhucosides A and B and many more chemical constituents.

Part	Phytoconstituent
Bark	Ethycinnamate, sesquiterene alcohol, α -terpenol, 3β -monocaprylic ester of eythrodiol, 3β -capryloxy oleanolic acid.
Fruits	α and β amyirin acetates
Flowers	Vitamin A and C
Nut-shell	n-hexacosanol quercetin and dihydroquercetin, β -sitosterol and its 3β -Dglucosides.
Seeds	Arachidic, linolelic, oleic, myrinsic palmitic and steric acids, α -alanine, aspartic acid, cystine, glycine, isoleucine and leucine, lysine, serine
Leaves	B-carotene and xanthophylls, erthodiol, palmitic acid, myricetin and its 3-o-arabinoside and 3-o-L-rhamnoside, quercetin and its 3-galactoside, oleanolic acid, β -sitosterol, n-hexacosnol, β -carotene, sitosterol, quercetin.

Utilization:

Medicinal and Nutritional Use: The Mahua tree is having lots of nutritional value in it. It produces fruit which is valued for its seed which yield high quantity of fat commercially known as Mahua butter or mowrah butter, many edible and medicinal applications and it is also used as biodiesel. Mahua fruit oil is used in cooking, frying and manufacturing chocolates. the seed fat has emulsion property so it is mostly used as an emulsifying agents.

Mahua has industrial application as it can be utilized in the manufacture of laundry soaps and lubricants. The seed cake is reported to have insecticidal and pesticidal property and used as organic manure in crops like rice sugarcane etc.

The medicinal properties which are seen in this plant are stimulant, demulcent, emollient, heating and many more.

Traditional uses of MADHUCA INDICA (*mahua*)

Place, Country	Part(s)	Medical Uses	Uses Prepration(s)	Reference(s)
India	Seeds cake	Anti Inflammartory,anti ulcer & hypoglycaemic activity	Ethanollic & crude alkaloid extracts	Seshagiri M. <i>et al</i> 2007
India	Bark	Antidiabetic activity	Methanol, water & petroleum ether	K Pavan Kumar <i>et al</i> 2011
India	Bark	Antihyperglycemic antioxidant	Ethanollic extract	Srirangam Prashanth <i>et al</i> 2010
India	Flower	Analgesic activity	Aqueous and alcoholic extracts	Dinesh Chandra <i>et al</i> 2001
India	Leaves & bark	Wound healing activity	Ethanollic extract	Smitha Sharma <i>et al</i> 2010
India	Leaves	Nephro and hepato protective activity	Ethanollic extract	S.Palani <i>et al</i> 2010
India	Leaves	Antioxidant activity	Ethanollic extract	S.palani <i>et al</i> 2010
India	Leaves	Cytotoxic activity	Pet Ether, chloroform,ethanol, acetone & water	Saluja M.S. <i>et al</i> 2011
India	Bark	Antibacterial activity	Aqueous ethanol, methanol,& acetone	Tambekar D.H. <i>et al</i> 2010
India	Leaves & stem	Antimicrobial activity	Hexane, ethanol, Chloroform	Mangesh Khond <i>et al</i> 2009
India	Bark	Antioxidant activity	70% ethanollic extract	Samaresh Pal Roy <i>et al</i> 2010
India	Aerial Part	Anti inflammatory, analgesic and antipyretic activity	Methanollic extract	Neha Shekhawat <i>et al</i> 2010
India	Flowers	Hepatoprotective activity	Methanollic extract	M.Umadevi <i>et al</i> 2011

India	Flowers	Skin disease	Juice	Srirangam Prashanth <i>et al 2010</i>
India	Seeds	Effective to alleviate pain	Oil	Srirangam Prashanth <i>et al 2010</i>
India	Leaves	Antihyperglycemic activity	Hydroethanolic extract	Rumi Ghosh <i>et al 2009</i>
India	Bark	Itch, swelling, fractures, and snake bite poisoning	Not defined	K Pavan Kumar <i>et al 2011</i>
India	Seeds	Rheumatism, Bleeding and spongy gums	Decoction	Tambekar D.H. <i>et al 2010</i>
India	Fruits	Asthma and phthisis	Roasted fruits	S.Palani <i>et al 2010</i>
India	Flowers	Cure cough	Roasted flowers	S.Palani <i>et al 2010</i>

Health Benefits of Mahua

Madhuca has following health benefits:

1. **Bronchitis:** flowers of Madhuca are used to treat chronic bronchitis. Flowers are also used in treatment of cough.
2. **Orchitis (Testis inflammation):** Madhuca leaves are boiled and used for relief from orchitis.
3. **Rheumatism:** A decoction is prepared by boiling bark in water and taken internally to get relief from rheumatism. Oil obtained from seeds can be applied on the affected areas.
4. **Diabetes:** Bark decoction is proven to be effective for cure of diabetes.
5. **Piles:** Oil extracted from seeds have laxative properties, which helps cure chronic constipation and piles.
6. **Eczema:** Madhuca leaves are effective in treatment of eczema.
7. **Burns:** Leaves ash is mixed with ghee and is used for cure of scalds and burns. To get relief from itching, bark paste is applied locally.
8. **Lactation:** Madhuca flowers are used to increase the milk production in feeding mothers. Seeds also have the same property.
9. **Gums:** 4 ml of the liquid extract obtained from bark is mixed with 300 ml of water is used as a gargle to get relief from spongy and bleeding gums.
10. **Tonsillitis:** the above preparation is also used for cure of chronic and acute tonsillitis and pharyngitis.

Common uses of MAHUA

- **Fodder:** Leaves , flowers and fruits are lopped for goats and sheeps.
- **Timber:** The heartwood is reddish brown, strong, hard and durable, very heavy (929 kg/cu.m) takes a fine finish. It is used for house construction, naves and felloes of cartwheels, door and window frames.
- **Erosion control:** Mahua has a large spreading superficial root system that holds soil together.
- **Shade or shelter:** The wide spreading crown provides shade for animal
- **Soil improver:** The seed cake has been used as fertilizer
- **Ornamental:** Mahua is occasionally planted as an avenue tree.

Conclusion

Plants are the important economical source of a number of well established drugs looking upon wide prospects and potential of Madhuca Indica for various purposes. The Mahua tree is hidden from the public eyes as its medical point of view. The study Therefore indicates that mahua tree gives significantly high quantity of oil. The oil is rich in PUFA and has desirable level of oleic and stearic acid to be used as cocoa substitute in confectionary products alternative fuel options for diesel.

The flowers are used as vegetable , for making cake , liquor etc. Mahua is used to cure Bronchitis, Rheumatism, Diabetes, Piles, Eczema, Gums, Burns etc. as for the better potential , good quality of mahua tree should be cultivated through plant tissue culture by means of micro propagation. Madhuca Indica has found several of pharamacological activity, yet several other activities have to be finding out.

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