

Review on Authentication of Medicinal Plant in Madhuca Longifolia (Mahua)

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ABSTRACT— Mahua (*Madhuca longifolia*) belonging to family Sapotaceae is found in different regions of India is known for its multipurpose uses for benefiting the tribal population in the country. It fulfills the basic requirement of food, fodder and fuel of the poor tribal population besides providing huge economic benefits from the different products made from it. Mahua is one of the naturally occurring plants which possess numerous health benefits. However, due to the availability for short time at limited places and highly perishable nature of this flower, it is not yet much explored by researchers and food processors except few for its value addition. Therefore, this review has been designed in such a way to focus on recent advancement in utilization of mahua.

KEYWORDS:

Madhuka longifolia ,seed oil,skin diseases, sapotaceae, Alalgescic, butter nut tree, medicinal plant, mahua oil

I. INTRODUCTION:

Medicinal plants are widely used for the treatment of rheumatism and many types of diseases. Most of the people are depends on these plant and trees for their survival and good health. Forest people are believed in the system of traditional medicine for their primary purposes and health. Treatment of various inflammatory diseases are cured by use of some medicinal herbs. Mahua is loaded with active compounds that provide with tremendous medicinal and therapeutic value from seasonal flu and fever.

According to world health organization (WHO), 80% of world are rely on traditional medicines for common ailments. The dependence of peoples on traditional medicines is increasing day by day and it also helps to reduce the side effect of modern drug.

Madhuca longifolia is an Indian tropical tree, largely found in the central, southern, north Indian plains and forests, Nepal, Myanmar and Sri Lanka. It is commonly known as madhuka, mahua, Butter Tree (In India), mahua, mahwa,

mhulo, Iluppai or vippa chettu. which belongs to the family Sapotaceae. ^[1] The name Madhuca is come out from Sanskrit language (madhu means honey) so its flower are sweet in nature. It is a large deciduous tree growing mostly under dry topical and sub-tropical climatic conditions. It is a fast-growing tree that grows to approximately 20 meters in height, possesses evergreen or semi- evergreen foliage.

Mahua (*Madhuca longifolia*) belongs to family Sapotaceae and finds origin in different regions Of India, Sri Lanka, Myanmar and Nepal It is a Multipurpose tree which fulfils three fundamental Needs of tribal individuals i.e. Food, Fodder and Fuel Flowers of plant are edible and have high Nutritive value majorly high amount of sugars and Subsequently having good amount of vitamins, Proteins, minerals and fats Because of the higher Amount of sugar, The flowers are utilized as asweetener in preperation of numerous traditional dishes like halwa, kheer, meethi puri etc.

According to WHO (2003) Approximately 65% of the world's population Integrate the medicinal plant for treatment. Mahua is One of the naturally occurring plants which possess Numerous health benefits. Tribal people use mahua Flowers for curing of skin diseases, headache, pitta And bronchitis.

Its flowers appear during March and April usually blooming depend upon environmental conditions. The plant is famous in tribal people because of its flower which is mostly used for liquor preparations. Mahua flower are renewable, cheap carbohydrate substrate which comes from the non- agricultural environment such as a forest. The wided use of Mahua flowers most of the study was carried out on ethanol production using flower sugar.

Flower juice is supplemented to Lactating women for augmentation of breast milk Due to the availability for short time at limited places and highly perishable nature of this flower, it is not yet Much explored by researchers and food processors Except few for its value addition. Therefore, this

Review has been designed in such a way to focus on Recent advancement in utilization of mahua flowers as food and medicine and its future prospective Regarding its value addition.

USES:

Mahua preparations are used for removing intestinal worms, in respiratory infections and in cases of debility and emaciation. It is cultivated in warm and humid regions for its oleaginous Seeds (producing between 20 and 200 kg of seeds annually per Tree, depending on maturity), flowers and wood. The fat (solid at Ambient temperature) is used for the care of the skin, to Manufacture soap or detergents, and as a vegetable butter. It Can also be used as a fuel oil. The seed cakes obtained after Extraction of oil constitute very good fertilizer. The flowers are Used to produce an alcoholic drink in tropical India. This drink is Also known to affect animals. ^[4] Several parts of the tree, including the bark, are used for their medicinal properties. It is Considered holy by many tribal communities because of its Usefulness.



The leaves of *Madhuca indica* (= *M. longifolia*) are fed on by the Moth *Antheraea paphia*, which produces tassar silk, a form of wild Silk of commercial importance in India.^[5] Leaves, flowers and fruits Are also lopped to feed goats and sheep.

The Tamils have several uses for *M. longifolia* (iluppai in Tamil). The Saying “aalai illaa oorukku iluppaip poo charkkarai” indicates when There is no cane sugar available, the flower of *M. longifolia* can be used, As it is very sweet. However, Tamil tradition cautions that excessive use Of this flower will result in imbalance of thinking and may even lead to Lunacy. ^[7] The alkaloids in the press cake of mahua seeds is reportedly Used in killing fishes in aquaculture ponds in some parts of India. The cake serves to fertilise the pond, which can be drained, sun Dried, refilled with water and restocked with fish fingerlings. ^[8]

MAHUA FLOWERS:

The mahua flower is edible and is a food item for tribals. They Use it to make syrup for medicinal purposes.

Mahua flowers are rich in total sugars, out of which reducing Sugar are present in high amount. The flowers are also fermented To produce the alcoholic drink mahua, a country liquor. ^[10] Tribals Of Surguja and Bastar in Chhattisgarh and peoples of Western Orissa, Santhals of Santhal Paraganas (Jharkhand), Koya tribals Of North-East Andhra Pradesh, Bhil tribals in western Madhya Pradesh and tribals of North Maharashtra consider the tree and the Mahua drink as part of their cultural heritage. Mahua is an Essential drink for tribal men and women during celebrations.



Mahua fruit are an essential food of Western Odisha people. The tree has a great cultural significance. There are many varieties of food prepared with its fruits and flowers. Also, Western Odisha people used to pray to this tree during festivals. The liquor produced from the flowers is largely colourless, opaque and not very strong. It is inexpensive and the production is largely done in home stills. Mahua flowers are also used to manufacture jam, which is made By tribal

co-operatives in the Gadchiroli district of Maharashtra.

Apart from that there is another company located in Wardha District of Maharashtra,” Sevagram Agro Industries” who are dealing In Mahua products at very large scale and exporting innovative Products such as seed oil and Mahua Jam to Arab countries.

In many parts of Bihar, such as villages in the district of Siwan, the Flowers of mahua tree are sun-dried; these sun-dried flowers are ground To flour and used to make various kinds of break



LITERATURE:

Wine prepared from Madhūka flowers (Madhuca longifolia) finds mention in several Hindu, Jain and Buddhist literature works.[13] It also finds mention in Ayurveda Samhitas which lists it among several different kinds of wine. [14]

Kali who is seated on a red lotus in full bloom, her beautiful face radiant, watching Mahākāla, who, drunk with the delicious **wine of the Madhuka flower**, is dancing before her..

Table: Composition of Mahua flower

No. No	Constituents	Fresh Flowers	Dry Flowers
1	Moisture	71.6-79.62 (%) (3.1)	11.01-20.8 (%) (4.5)
2	pH	4.6	-
3	Starch (g/100g)	0.96	-
4	Ash (%)	1.5	1.4-4.30
5	Total Sugar (g/100g)	47.37-54.00	41.62
6	Total Protein (%)	34.28	-
7	Calcium (%)	0.43	-
8	Phosphorus (g/100g)	36.3-70.62	28.32
9	Protein (%)	6.05-6.37	5.62
10	Fiber (%)	1.8	0.69-4.06
11	Fiber (%)	20.8	-
12	Calcium (mg/100g)	43	0.14-0
13	Phosphorus (mg/100g)	21	0.14-2
14	Carbonyl (g/100g)	207	-

Sacred tree :

Tree is the sacred tree of various temples in South India, including Irumbai Mahaleswarar Temple, Iruppaipattu Neelakandeswarar Temple, Tirukkodimaada Senkundrur at Tiruchengode, and Thiruvanathapuram.^[16] The Tamil saint-philosopher Valluvar is believed to have born under an iluppai tree within the Ekambareshwarar Temple at Mylapore, and hence

madhūka remains the sanctum tree of the Valluvar shrine built within the Ekambareshwarar temple complex.

MAHUCA OIL:

Average oil Content: 32.92 to 57.53%^[18]
 Refractive index: 1.452
 Fatty acid composition (acid, %) : palmitic (c16:0) : 24.5, stearic (c18:0) : 22.7, oleic (c18:1) : 37.0, linoleic (c18:2) : 14.3
 Elements : Carbon (C), Calcium (Ca), Nitrogen (N), Magnesium (Mg),Phosphorus (P),

Trifed, a website of the Ministry of Tribal Affairs, Government of India reports: "Mahua oil has emollient properties and is used in skin disease,rheumatism and headache. It is also a laxative and considered useful in habitual constipation, piles and haemorrhoids and as an emetic.Native tribes also used it as an illuminant and hair fixer."

Different Views And Aspects Of M. Longifoliavar.Latifolia:SOME BASIC FACTS ABOUT MAHUA:



- **Scientific name:** Madhuca longifolia
- **Common names:** Mahuwa, Mahua, Mahwa Mohulo, Iluppai, Butter Nut Tree,Ippe
- **Family:** Sapotaceae
- **Genus:** Madhuka
- **Species:** longifolia
- **Order:** Ericaleae
- **English name:** Butternut tree
- **Parts used:** Bark, seeds and flowers Native region and geographical
- **Distribution:** Mahua is a tropical tree belonging to India, Nepal, Sri Lanka and Myanmar with its distribution widely spread across the states of Central and Northern India

NUTRITION VALUE OF MAHUA:

Mahua seeds are highly rich in healthy fats, which adds a great value to its economic importance as it is commercially used to produce butter. Though every part of mahua may have a slightly different nutritional content, mentioned below is the nutritional value of Mahua seeds only. Nutritional value of *Madhuca longifolia* seeds (whole) per 100 gram:

- Total fats: 50-31%
- Proteins: 16.9%
- Carbohydrates: 22%
- Total fibre: 3.2%

DOMESTIC AND AGRICULTURAL USES OF MAHUA:

Madhuca or buttercup seeds are conventionally used to obtain mahua butter, which is of wide industrial importance. It is used as a substitute for cocoa butter in cosmetics and pharmacies, as cooking oil, for making chocolates and in adulteration of ghee. Flour obtained from mahua seeds works as a seasonal substitute of cereal grains to make rotis and puris. Since mahua seeds are rich in fats, research studies have indicated their ability to work as a biofuel. Due to the presence of high amount of sugars, mahua flower is added as a sweetening agent in traditional Indian desserts such as barfi, kheer, halwa, and meethi puri. They are used for the production of cheap liquor and as a cattle feed, which helps to improve the health of cattle and increase milk production.

MADHUCA LONGIFOLIA PLANT OF HEALTH BENEFITS

- **Mahua health benefits:**

Mahua tree is known to be a treasure of multiple medicinal properties, which can be used for the treatment for a large number of diseases. Flower extracts of *Madhuca longifolia* are used against heart diseases, leucorrhoea, menorrhagia, polyuria, bronchitis, and tonsillitis. The bark of the tree is used for rheumatism, chronic bronchitis, diabetes mellitus, and bleeding. Mahua leaves are used as a medicine for rheumatism and hemorrhoids. *Madhuca* roots are highly effective against inflammation, diarrhoea and fever. Let us discuss some of the scientifically proven benefits of mahua plant in detail. **Eg. Vedic Rhythm**, Rural Treasures, Tribal Refreshar, Moolihal, Vedsun, Dark Forest

- **Mahua for dental problems:**

Mahua is considered highly beneficial for maintaining healthy Gums and getting rid of

tonsillitis. Traditionally, 4mL of liquid Extract obtained from the bark of mahua tree mixed with 300 mL of water is used as a gargle to get relief from bleeding and spongy gums. The same preparation is also used to alleviate the symptoms of inflammatory conditions like acute tonsillitis and pharyngitis. Lab studies indicate that this is because of the antimicrobial properties of *Madhuca longifolia* bark, which is imparted to it in part due to the presence of active compounds known as triterpenoid saponins. **Eg. Vedic Rhythm**

- **Mahua for heart diseases:**

Cardiovascular diseases, more commonly known as heart diseases claim a large number of deaths in the world every year. Mahua seeds, with their multiple pharmacological actions, not only help promote heart health but also are favourable for maintaining the overall health of the body. Clinical studies have shown that the predominant presence of monounsaturated fatty acids, particularly oleic acid in mahua seeds help to reduce low-density lipoprotein (LDL or bad cholesterol), which otherwise poses a high risk for coronary heart disease (CHD). In fact, mahua oil is considered as one of the best cooking oils, even better than palm oil or kokum butter. Switching your cooking oil yet? **Eg. Tribal Refreshar**

- **Mahua benefits for skin:**

Traditionally, mahua flower juice is used for the treatment of various skin conditions. Due to its oleating properties, this juice is especially effective against itching. Mahua leaves when coated with sesame oil, heated over a fire and strapped over eczema affected skin help to provide symptomatic relief.

Mahua oil is the chemical-free product that works as an excellent skincare product as it provides glowing and radiant skin. Also, it gets rid of any kind of acne or blemished on the skin making it absolutely clear and soft on the touch.

Benefits: Relieves joint pain, cures wrinkles, and pimples.

- **Mahua benefits for liver:**

Liver is one of the most important organs of the body. Not only does it help in digestion but also it detoxifies the body, helping maintain overall health. True to its name, mahua is an elixir to the liver too. As a hepatoprotective agent, it reinforces the walls of the liver, preventing the release of harmful chemicals like Serum glutamic-oxaloacetic transaminase (SGOT) and Alanine

aminotransferase (ALT) in blood. Since both these chemicals are used as markers to detect liver damage, their absence from the bloodstream is an indication of a healthy liver. Furthermore, the antioxidant nature of mahua has been suggested to help cope with liver cell death in hepatitis (inflammation of the liver). Thus providing relief from hepatitis symptoms and slowing down the progression of the disease. **Eg.** Vanamrut, Godvana Harbs,

- **Mahua for epilepsy:**

Epilepsy is a complex disorder, in which a person experiences fits due to abnormal brain activity. Despite the various drugs available for the treatment of epilepsy, tribal people continue to rely on natural ways for its management and mahua offers a great solution to this condition. Research studies report that methanolic extracts of Madhuca leaves increase the release of GABA, a neurotransmitter which counters the agitated neuronal activity in epilepsy patients. This not only delays the onset of seizures but

- **Mahua for stomach ulcers:**

Stomach ulcers or gastric ulcers are a type of open sore that occur in the inner lining of the stomach or intestines. They are caused as a result of disruption of the mucous lining of the stomach due to overproduction of gastric juices. It inhibits the secretion of histamine, a compound which controls acid production in stomach hence reducing the irritation caused by it and allowing the ulcer to heal.

It is said that this mucus lining helps to protect the stomach from the digestive juices present inside it. Possessing significant anti-ulcer properties, mahua is reported to be very effective in providing relief from the distressing symptoms of peptic ulcers.

Mahua also has a demulcent action, which means it forms a protective layer over the mucous membrane of the stomach, protecting it from the harmful effects of excess acid. **Eg.** Tribal Refresher,

- **Mahua for bronchitis:**

Traditionally, distilled juice of mahua flowers along with a glass of milk is used to provide relief to people suffering from chronic bronchitis.

Bronchitis is an inflammatory condition of airways, especially of bronchial tubes, which are responsible for carrying air into your lungs. It manifests in the form of coughing followed by wheezing and shortness of breath, which is caused by increased mucus production.

- **Mahua for intestinal worms:**

Worm infections are one of the most common helminth infections in the world. Though they mainly affect the poor and deprived communities, active cases are also found in developed countries too. They usually increase the risk of anaemia and intestinal disorders. So it is important to treat the condition at the earliest.

Mahua, being called as the all in one tree, is an excellent remedy for these parasitic infections. Both methanolic and ethanolic extracts of Madhuca longifolia have been proven to show potent anti-helminthic activity among the presence of other plant extracts.

Lab studies suggest that methanolic extracts of mahua, when administered at a dose of 60 mg/ml renders toxicity and paralyses or kills worms. Though, in the absence of clinical studies, not much can be said about its effect on the human body. **Eg.** Vedsun, Swesam, Salvi

- **Domestic and agricultural uses of mahua:**

Madhuca or buttercup seeds are conventionally used to obtain mahua butter, which is of wide industrial importance. It is used as a substitute for cocoa butter in cosmetics and pharmacies, as cooking oil, for making chocolates and in adulteration of ghee Flour obtained from mahua seeds works as a seasonal substitute of cereal grains to make rotis and puris Since mahua seeds are rich in fats, research studies have indicated their ability to work as a biofuel Due to the presence of high amount of sugars, mahua flower is added as a sweetening agent in traditional Indian desserts such as barfi, kheer, halwa, and meethi puri. They are used for the production of cheap liquor and as a cattle feed, which helps to improve the health of cattle and increase milk production

MEDICINAL PROPERTIES OF MAHUA FLOWERS:

- Antibacterial activity
- Antihelmenthic activity
- Antioxidant activity
- Anti-cancer activity
- Analgesic activity
- Aphrodisiac
- Astringent
- Demulcent

• Here are the study remarks of some medicinal properties of Mahua flowers

PROPERTY	EXTRACT	EFFECT
Antibacterial	Aqueous and methanolic	Effective against Bacillus subtilis and Klebsiella pneumonia.
Anthelmintic	Methanolic and ethanolic	Fights against Indian earthworms.
Analgesic	Aqueous and alcoholic	Shows analgesic effect.
Antioxidant	-	Flower extract increases, antioxidant power increases.
Anticancer	-	Floral extract increases, cytotoxic effect increases.
Hepatoprotective	Methanolic	Increases serum level of proteins and albumins.

Here are the study remarks of some medicinal properties of Mahua flowers

Medicinal uses of Mahua flowers:

Below are the remarks of the medicinal uses of mahua flowers based on medical studies.

➤ Medicinal uses of Mahua flowers:

Below are the remarks of the medicinal uses of mahua flowers based on medical studies.

FORM	USE	EFFECT
Flower juice	Tonic	It has high protein.
	Skin diseases	It treats skin itching.
	Eye diseases	It cures eye problems.
	Raktapitta	It stops bleeding.
Flower powder	Diarrhea and Colitis	It acts as an astringent.
	Headache	It is used as a nasal drop.
Raw flowers	Lactation	It acts as a galactagogue.
Roasted flowers	Cough and Bronchitis	-
Flower with milk	Impotence and General debility	-
Flowers with ghee	Piles	It acts as a cooling agent.

Extracted method of madhuca Longifolia

Oil from Madhuca longifolia seed kernel was extracted with 3 methods as

SIDE EFFECTS OF MAHUA:

1. Animal studies suggest that regular use of mahua may lead to infertility
2. Since it is hypoglycemic in nature (reduces blood sugar levels), mahua may interfere with anti-diabetic drugs. If you are taking such medicines or have inherently low blood sugar levels, it is best to avoid mahua or check in with your doctor before taking it in any form
3. Mahua seeds have been found to possess immunosuppressive properties (suppresses the function of immune system). Do not take mahua if you suffer from an autoimmune disease or are taking immunosuppressant drugs
4. Mahua naturally has a hypoglycemic activity which means it can reduce sugar levels in the blood. So, if you are taking anti-diabetic medicine, mahua may interact with it. If you are taking medicine for low blood sugar levels, mahua is not recommended until your doctor says yes to it.
5. Not only mahua but any herb or medicine can also cause side effects when taken in inappropriate doses or without any medical supervision.

II. CONCLUSION

M. longifolia is highly regarded as a universal panacea in ayurvedic medicine. Ethno medicinal description about the plant says to possess various activities like antipyretic, anti-inflammatory, analgesic, antidiabetic and wound healing. Hope the outcome of this review will further emphasize the existing phytochemical and pharmacological profile of M. longifolia and provide away in future for pharmacotherapeutic uses

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 and production of margarines, cosmetic and pharmaceutical industries. The mahua oil also has potential for 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 and flower juice is used in the treatment of various disease and ailments. The seeds are thus

valuable in meeting demands for food and food supplements with functional, health-promoting properties in addition to industrial uses.

As for the better potential, good quality of mahua tree should be cultivated through plant tissue culture by means of micro propagation. The research workers have to come along with the people of tribal community, so they may have more and valuable knowledge.

In coming next generation the importance of plant and mahua tree is going to be increase because of their effectiveness, easy availability, low cost and comparatively being devoid of toxic effect. Madhuca Indica has found several of pharmacological activity, yet several other activities have to be finding out.

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