

Medicinal plants- *Simarouba glauca* and *Dillenia indica*

R. K. Bhattacharyya¹, Nadia Debbarma² and B. N. Hazarika^{3*}

¹Assam Agricultural University, Jorhat

²Sikkim University, Sikkim

³Central Agricultural University, Imphal

*Email: bnhazarika13@yahoo.co.in

Received : 30.12.17 ; Revised : 20.01.18 ; Accepted : 30.04.18

Simarouba glauca

Simarouba is an attractive, exotic and versatile medicinal plant with numerous properties. Popularly known as *Lakshmitaru* in India and as *Paradise Tree*, *Aceituno*, and *Bitterwood* in its original home-Central and South America. *Simarouba* was introduced to India in 1960 by NBPGR in Amaravathi, Maharashtra. Later, during 1986 the scientists Dr Syamasundar Joshi and Dr Shantha Joshi at University of Agricultural Sciences, Bangalore made extensive studies and developed technologies for its uses and cultivation.

The Plant

Simarouba glauca is a medium-sized tree and at full grown stage attains 20 m high, with a trunk 50 to 80 cm in diameter. It produces bright green leaves 20 to 50 cm in length, small white flowers, and small blackish purple or yellowish green fruits. It is indigenous to the Amazon rainforest and other tropical areas in Mexico, Cuba, Haiti, Jamaica, and Central America.

Uses

All the parts of *Simarouba* are useful. Timber from *Simarouba* is light, moderately strong, attractively grained and can be used to manufacture household furniture and other products. Its leaf litter can be used for vermicompost making. The organic manure produced from one tree is 20 kg from leaf litter and pulp waste, apart from the de-oiled seed cakes.

Seed usage

The seeds contain 60-75 per cent oil, the highest from any plant which means a yield of around 2,000 kg of oil per hectare may be obtained.. The edible seed oil from *Lakshmitaru* tree is the only plant source of top quality vegetable oil.

Seeds can also be used to generate bio-diesel and various oil-based industrial products. The bio-fuel from *Lakshmitaru* is far superior bio-fuel plants like *Neem*, *Pongamia* and *Jatropha*.

The de-oiled cake makes for a nitrogen-rich manure.

Health benefits

Anti-luekemic and anti-cancerous properties:

Simarouba has 11 medicinally important quassinoids, the active principles in the tree, that have antimicrobial properties and quassinoids namely ailanthinone, glaucarubinone, dehydroglaucarubinone and holacanthone that are anti-luekemic and anti-cancerous. Cancers of the mouth, lungs, ovaries and breast may be cured using *Simarouba*.

- The anti-cancerous properties of the leaf and bark extract can cure I and II stage cancer and improve the quality of life in the III and IV stages.
- All illnesses caused by microbes like bacteria, viruses, protozoa like Chikungunya, hepatitis, herpes, malaria, viral coughs and colds, dental caries can be effectively cured by consumption of a decoction made from leaves and bark of the tree.
- *Lakshmitaru* can make a complete recovery or drastic improvement from various conditions such as gastritis from *Helicobacter pylori*, acidity, rheumatoid arthritis as well as various menstrual problems of women. *Simarouba* can expel worms.
- The fruit pulp contains 11-16 per cent sugars which can be used for healthy drink or can be used to produce ethanol. Waste fruit pulp can be used in vermicompost.

Table 1: Various part of plant of *Dillenia indica* having various chemical constituents

Parts	Chemical constitution
Stem, Bark	Tannin, sitosterol, dillenetin, betunaldehyde, betulinic acid, lupeol and stigmastero, betulin, kaempferol, rhamnetin, dihydro-isorhamnetin, myricetin, naringenin and quercetin.
Fruits	Arabinogalactan, Fixed oil, colouring matter, sterols, glycosides, saponins, proteins, free amino acids, sugars, free acids, anthraquinone and tasnnins.
Leaves	N-hentriacontanol, ?-sitosterol, betulin, betulinic acid and kaempferol.

Table 2: Various parts of *Dillenia indica* used in curing ailments

Parts	Uses
Leaf	<p>Hydrocele and contraceptive: A handful of root is tied around the waist for hydrocele.</p> <p>For contraceptive uses, 1 young leaf of the plant is mixed with 1 handful of rice and soaked in water overnight. In the morning, rice and leaf is macerated and pithas (flattened and steamed food item) are made of the mixture and they are taken on empty stomach.</p> <p>Dysentery, promeho: One cup of juice obtained from squeezed young leaves is taken twice daily for 7 days.</p> <p>Juice of leaves and decoction are used in curing fever, cough, constipation, chest pain and for women having breast cancer. It is also used in defeating malaria like symptoms.</p> <p>The alcoholic extract of leaves is reported to have CNS depressant activity and also exhibits antioxidant activity due to presence of phenolics constituents. The leaves are used as laxative, tonic and astringents.</p> <p>It is used in treatment of gastrointestinal disorders including diarrhea, indigestion, colic, acidity, constipation, bloating, anorexia, stomachache and Respiratory tract disorders including asthma, bronchitis, pneumonia, cold, influenza, mucus, tonsillitis and sore throat</p>
Seed	To enhance digestion: 1 teaspoonful of dried and powdered seed is taken to ensure better digestion
Fruit	This fruit is beneficial for assessing better appetite, to tackle weakness and rheumatic pain and used for garnish in indigenous ayurvedic medicine for nervousness. In addition to this, it is also used as a cosmetic for preventing dandruff.
Bark	Paste is applied on skin for dealing with dermatological problems. On the other hand bark is also used for production of charcoal. Bruised bark is applied as a cataplasm for patients with arthritis.

How to use?

Leaf and bark decoction as drinks are prepared in simple methods for use 2 to 3 times daily. Three mature and shade dried leaflets or dried 1.5 cm² bark pieces are cut into small pieces and place them in a stainless steel saucepan containing 200 ml water. The mixture is boiled in low flame for 3 minutes preferably at night. The saucepan is covered with a stainless steel plate and left as such overnight. In the morning, decoction is warmed and

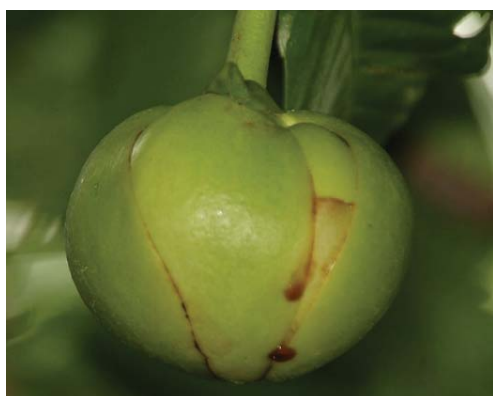
a teacup full is slowly swallowed in empty stomach. There should be a gap of 30 minutes for consumption of other foods. In the evening, the left over cut pieces of *Lakshmitaru* may again be used in a similar manner to prepare the decoction and may be consumed another cup 30 minutes prior to dinner.

Health hazards for contraindication

It is practically negligible. Consumption of high dosages would result in side effects like increased



Picture 1: Leaf and fruits of *Simarouba glauca*



Fruit



Leaf



Bark



Fruiting habit

Picture 2: Fruit, leaf, bark and fruiting habit of *Dillenia indica*

perspiration and urination, nausea, and/or vomiting.

Dillenia indica

Dillenia indica f. *elongata* (Miq.) Miq has originated from Indonesia and belongs to family Dilleniaceae. It grows widely in tropical forests in western peninsula and evergreen forests of the sub-Himalayan tracts from Uttrakhand to eastwards Assam and southwards to central and southern India and also found in Bangladesh, Nepal, China, Sri Lanka and Vietnam.

It is an evergreen large shrub or small to medium-sized tree growing to 15 m tall. The leaves are 15-36 cm long, with a conspicuously corrugated

surface with impressed veins. The flower is large, 15-20 cm diameter, with five white petals and numerous yellow stamens. The fruit is a 5-12 cm diameter aggregate of 15 carpels. Each carpel containing five seeds embedded in an edible but fibrous pulp.

The fruit is used in treating laxative problems, abdominal pain. Bark and leaves possess astringent properties, the alcoholic extract of leaves of this fruit had been reported to impact CNS depressant activities, seed have been reported to possess antimicrobial activity and fruits of *Dillenia indica* f. *elongata* (Miq.) Miq have been found to be rich in showing anti-oxidant activity.