Medicinal Properties Of Shorea Robusta Gaertn.F. - A Review

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Abstract: Ayurveda, the traditional system of medicine is highly regarded as the mother of all medical sciences. These days’ herbal medicines are more popular than modern medicine because of their effectiveness, easy availability, low cost and for being comparatively devoid of side effects. Shala (Shorea robusta) belonging to Dipterocarpaceae family is an important medicinal plant used in various Indian system of medicine. A detail description about this plant has been found from Vedic period to recent time in various Ayurvedic texts. This is a large deciduous plant which heart-wood and exudates are mostly used for various medicinal purposes. It can be seen in tropical Himalayas, North-eastern and central India and West Bengal hills upto 1,700m. Shala is composed of various chemical constituents mainly Bergenin, Shoreaphenol, Oleandronic acid, Chalcone, Dipterocarpol, Dammarenolic acid, Asiatic acid, Shorbic acid which are responsible for the many therapeutical effects. Shala having Kashaya rasa, Ruksha guna, Ushna veerya and Katu vipaka with Kapha-Pittaahara properties. It also posses pharmacological action likes Anti-diarrhoeal, Anti-bacterial, Analgesic activity, Anti-Inflammatory, Anti-Diabetic etc. It has medohara, vranashodhana-ropana, grahi, vishaghna, vedanasthapana etc. properties so has been indicated in Visphota, kustha, prameha, raktavikara, visavikara, Sweta pradar etc. A detailed review of this medicinal plant with various aspects is definitely a good step ahead in a new direction in herbal medicinal field.

Keywords: Pharmacological properties, Phytochemical profile, Shorea robusta

Introduction:
Ayurveda is a complete self being system, which dominantly stresses on living a good and healthy life style that does not have any imbalance in the harmony and system of the body. As per World Health Organization (WHO), almost 80% of the population of developing countries rely on traditional medicines, plant drugs for their primary health care needs. In developed countries, the use of Indian traditional medicines is quite prevalent and modern pharmacopoeia still contains at least 25% drugs derived from plants. A lot of descriptions regarding plants availability and various uses of different types of medicinal plants have been explained in our Vedic literature, Nighantu & Samhitas since long years ago. Active principle is believed to be responsible for all the action of the drugs and the quantity of active principles differs from plant to plant, acc to season, age of plant, and different parts of plant. The ancient Acharyas of Ayurveda have given indications of seasons, time of collection, specific part to be collected of raw drugs as the medicinal property of the plant depends upon the season in which they grow and collected. In the present scenario the society depend on plants not only for diet but also for the medicinal purposes. In our classical textual it has been explained that a single drug posses potent ability to cure multiple diseases. So it needs to be authenticated scientifically to prove that what written in our classical literature are quite true. Advance modern science is rapidly growing in a new direction. The standardization of the drugs in terms of modern parameter by using the new techniques & relevant instruments is the need of the hour for our today’s society. So, it is ideal that Ayurvedic drug research & standardization should be based on Ayurvedic principles. Shorea robusta Gaertn. is a tree commonly known as sal or shala tree, belonging to the family Dipterocarpaceae. So a review is compiled here on Shorea robusta Gaertn. This information will highlight the importance of Shorea robusta and will provide a new direction for researchers in the future.

- **Drug:** Shala
- **Latin Name:** Shorea robusta Gaertn.f.
- **Family:** Dipterocarpaceae

Classical categorization: [1, 2, 3, 4, 5, 6, 7, 8]
- **Charaka Samhita:** Vedanasthapana, Kashayaskandha
- **Sushruta Samhita:** Salasaradi, Lodhradi
- **Astanga Hridaya:** Asanadi gana, Eladi gana (Rala)
- **Bhava prakash Nighantu:** Vatadi Varga
- **Raj Nighantu:** Chandanadi Varga
- **Kaiyadev Nighantu:** Aushadi Varga
- **Dhanvantari Nighantu:** Amradi Varga (Salva), Chandanadi Varga (Rala)

Scientific classification: [24, 25]
- **Kingdom:** Plantae
- **Subkingdom:** Viridicaeplantae
- **Infrakingdom:** Streptophyta
- **Division:** Tracheophyta
- **Subdivision:** Spermatophyta
- **Infradivision:** Angiospermae
- **Class:** Magnoliopsida
- **Superorder:** Rosanae
- **Order:** Malvales
- Family: Dipterocarpaceae
- Genus: Shorea
- Species: Shorea robusta

Synonyms: [5, 9, 10]
- The Various synonyms of Shala like Salah, Aswakarnah, Agnivallabha, Ashvakarna, Asvakarnika, Chiraparni, Dhanya, Dirghaparni, Dirghashakha, Divyasara, Jaranadruma, Kala, Kalalajodhbha, Karshya, Kashyai, Kaushika, Kaushikava, Kushika, Lalana, Rala, Latashankha, Latatuar, Lakarakya, Sala, Salaniryasa, Salaveshta, Sarja, Sarjakarya, Shura, Sarjarasa, Sarjika, Sasyasambara, Sayasamvera, Shanktaru, Shankuriksha, Shasyasambara, Sidhaka, Vansha, Vastakarna, Tarkshyaprasava, Vallivriksha, Yakshadhupa, Vansha, Vastakarna, Tarkshyaprasava, Vallivriksha, Yakshadhupa are mentioned in various ayurvedic classical books and nighantas (material medica of ayurveda).

Vernacular Names: [10, 11, 12, 13, 14]
- Assam: Sal, Dieng-blei, Hal-orang, Boslal
- Bengali: Shaalgaach, Sal, Shal, Sakher, Sakhu, Sakhu, Sakoh, Sala, Salwa
- Bombay: Sal
- English: Sal tree, Shaal tree, Common Sal, Indian Dammer Sal
- Gujarati: Shaalvriksh, Ral
- Hindi: Saal, Sal, Shal, Ral, Sakhua, Saakhu, , Sakhu, , Sakher, Sekhu, Sakoh, Sula
- Kannad: Saal, Kabbha, Baelabobu
- Malayalam: Saaalvirkham, Malappumarutu, Karimaruthu
- Marathi: Shaalvriksh, Raalechaavriksha, Sala, Guggilu, Rala, Sajara
- Oriya: Salva, Shaaluaagachha, Sal, Saguva, Sagu, Sala, Salwa, Shalua, Sodingi, Soringhi
- Punjabi: Shala, Sal
- Tamil: Saalam, Kungiliyam, Talura, Kungilayam
- Telegu: Guggilam, Sarjakamu, Guggilamu, Jalarichettu, Gugal, Guggilamu, Saluva, Sarjakarna, Sarjamu
- Urdu: Ral

Morphology: [10, 11, 12, 15]
- Habit: Large deciduous tree, 20-30 m in height, seldom leafless.
- Leaf: Simple, Alternate, entire, 10-30 cm x 5-18 cm, ovate-oblong, acuminate, tough, coriaceous, glabrous, lusturose when mature, base cordate or rounded, lateral nerves 12-15 pairs. Petiole 1.2-2 cm. long, stipules 7.5 mm long.
- Flower: 1.2 cm long, whitish or cream-yellowish colour born in axillary or terminal racemose panicles. 10-23 cm. long, branches grey-tomentosa, calyx of 5-6 twisted lobe with a short tube, corolla of 5 petals, stamens 15 in 3 rows, ovary with subulate style and entire or minutely lobed stigma. Ovary 3-celled.
- Fruit: 1.2 cm. long, indehiscent, acute, ovoid with 5 equal wings. Wings of the fruiting calyx somewhat unequal oblong or spatulate, 5-7.5 long, obtuse, with 10-15 longitudinal nerves joined by numerous straight or oblique transverse veins, reddish to pale yellowish green. 1-Seeded nut.
- Seed: Ovoid with fleshy unequal cotyledons.

Habitat: [10, 11, 12]
Shala is found largely from Punjab along the sub-Himalayan tract to Garo, Khasi and Jaintia hills, West Bengal, Bihar, Orissa, Andhra Pradesh and Madhya Pradesh. It can also be seen in tropical Himalayas, North-eastern and central India and West Bengal hills up to 1,700 m.

Chemical Constituents: [14, 16]
The medicinal plant Shala contains Bergenin, Shoreaphenol, Oleanolic acid, Chalcone, Glucopyranoside, 4-hydroxychalcone-4-o-β-D-glucopyranoside, 12α-hydroxy-3-oxy-olean-28, 13-lactone, β-sitosterol, hydroxyphanone, Dammarenediol 2, Dipterocarpol, Dammarenolic acid, Asiatic acid, α-amyrin isolated from resin, 2α,3β,23-trihydroxy-11β-methoxyurs-12-en-28-oic acid, Ursolic acid, 2α,3β and 2α,3ε-dihydroxyurs-12-en-28-oic acids, 3β,23-dihydroxyolean-12-en-28-oic acid, 2α,3β,23-trihydroxyurs-12-en-28-oic acid, 3β-hydroxy-28-nor-urs-12-en, Schorbec acid.

Ayurvedic Properties: [5, 7, 14, 17, 18]
- Rasa: Kashaya
- Gunma: Ruksha
- Virya: Ushna (Rala-_sheeta)
- Vipaka: Katu
- Doshakarma: Kapha-Pitta hara

Action: [5, 6, 7, 8, 14, 15, 18, 19]
Shala is a very much potent drug as it posses Stimulant, expectorant, diuretics, styptic actions. It also has medohara, vrashoshodhana, vraranopana, grahi, vishaghna, vedanasthapana, stambhama, krimighna properties.

Pharmacological Action: [19, 20]

Phytochemical Study: [21]
It is revealed that calcium, iron, manganese, phosphorus, potassium, sulphur are present in various part of S. robusta. Heavy metal like silver is reported in leaf & root. In addition to this inorganic substance like carbohydrate, Starch, Tannin, Protein, Saponin, Phenol, Glycoside, Alkaloids (leaf & bark) are also found. The bark of the plant is alkaline (PH=7.4) while other parts are acidic in nature. The extractive value &ash value of heartwood are [14]

- Foreign material - Not more than 2 per cent.
- Total ash - Not more than 2 per cent.
- Acid-insoluble ash - Not more than 0.7 per cent.
- Alcohol-soluble extractive - Not less than 6 per cent.
- Water-soluble extractive - Not less than 1.5 per cent.

T.L.C. – T.L.C. of the methanolic extract on precoated silica gel ‘G’ plate (0.2 mm thick) using toluene:ethyl acetate : formic acid (5:5:1), under UV 254 nm shows spots at Rf. 0.14, 0.25, 0.31, 0.41, 0.55, 0.64 and 0.72. Under UV 366 shows spots at Rf. 0.13 (brown), 0.17 (brown), 0.21 (brown), 0.26 (brown), 0.30 (brown), 0.35 (brown), 0.57 (blue), 0.60 (blue), 0.64 (blue), 0.68 (blue), 0.75 (blue) and 0.85 (blue).

**Indication:** [6, 7, 8, 9, 12, 15, 16, 23]

The medicinal drug Shala has been indicated in Jwara, visphota, siradosha, trut, agnidaha, kandu, krimi, kustha, pandu, prameha, raktavikara, sotha, upadamsa, vatavyadhi, visavikara, bradhna, vidradhi,rvana, yoniroga, kannaroga, badhirya, asthubhanga, varnya, twak vikara, Sweta pradara, rakshoghna, atisaara, hiccough, asthma, galaganda, diseases of mouth, diseases of eye, consumption.

**Therapeutic Indication:** [15, 22, 23]

- Prameha:
  1. In Kaphaja Prameha, the decoction of Sala, arjuna and yavani mixed with honey is very much useful (CS.Chi.6/27-30).
  2. The powdered flowers of Sala mixed with honey is useful in Prameha (CS.Chi 6/35 & AH. Chi. 12/15-16).
  3. Paste of Sala, Kampillaka and muskaka 10gm. Mixed with honey, amalaki juice and haridra should be taken (Su.Chi.11/8).
- Hiccough and Asthma: Gum-resin of Sala should be inhaled in Hiccough and Asthma.
- Kustha: Ghee cooked with priyala, sala, aragvadha, nimbhi, saaptaparna, chitraka, maricha, vacha, and kustha is efficacious in Kustha caused by Kapha.(Su.Chi 9/7)
- Galaganda (Goitre): Heart-wood of Sala tree mixed in cow-urine should be taken in morning in Galaganda caused by medas.(Su.Chi 18/53)
- Diseases of mouth: It enters into the composition of snailhika dhuma (Su.Chi 22/69).
- Diseases of eye: The powdered flowers of Kutaja, Ashoka, sala, Amra, priyangu, kamala, and utpala mixed with renuka, pippali, haritaki and amalaki along with ghee and honey and kept in a bamboo-tube should be used as collyrium in pupil affected by Kapha and Pitta .(Su.U.17/8-9).
- Diseases of ear: In various diseases of ear, the juice of amra, kapittha, madhuuka, dhava and Sala or oil cooked therewith is filled.(Su.U.21/47)
- Consumption: Sala is one of the ingredients in eladi formulation (SS.U.41/50).
- Anaemia: In anaemia the powder of heart-wood of Sala etc. or amalaka fruit should be taken with honey.

**Parts used:** [11, 12, 15, 18]

- Stem-Bark, leaves, fruits, resin, Heart-wood, flowers, gum-resin

**Dose:** [13, 14]

- 3-6 gm. Powder (Churna)
- 50-100 ml. Decoction (Kwath)

**Important Formulations:** [14]

- Ayaskriti
- Eladi Ghrita
- Sarjarasadi Malahara
- Atasyadi Lepa
- Mahamanjisthadhirista

**Toxicity:** [21]

There is no any information reported about toxicity on Shorea robusta Gaertn f. plant according to literature survey in data and Google, PUBMED, IPSC-INTOX, Scopus, etc.

**Safety Aspects:** [13]

The drug is traditionally to be safe in the dosage mentioned.

**Conclusion:**

Shorea robusta (Shala), an important traditional Indian medicinal plant used in wide range of medical treatments. The plant has been in use for a long period of time without any documented serious adverse effects. The above presented review on its botany, traditional uses, pharmacological activities and phytochemistry which provides preliminary information regarding this drug will have huge potential for the pharmaceutical industry. Further studies on this potential medicinal plant will provide a new direction to the service of mankind.

**References:**


