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Lakṣmanā-Āyurvedic Drug of Controversial Origin

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Introduction

Lakṣmanā is an important medicinal plant of *Āyurveda*, the ancient system of healing. *Lakṣmanā* is type of *kantkārī*, a medicinal plant widely used in *Āyurveda* in the treatment of respiratory diseases. *Lakṣmanā* has been described as white variety of *kantkārī*, making it possible representative of Natural Order Solanaceae. *Kantkārī* is ingredient of *daśmūla*, the *Āyurvedic* anti-inflammatory. The drug is of high interest as it has been mentioned as possible treatment of female infertility. *Bhāvamiśra*, an ancient *Āyurvedic* physician, however mentions *kantkārī* for promoting conception in females.

***Lakṣmanā* in ancient texts**

Bhāvprakash Nighantu

Synonyms: *Svetā*, *kśudrā*, *candrahāsa*, *kṣetradutikā*, *garbhadā*, *candrmā*, *candrī*, *candapuśpā* and *priyankari*.

Actions: Pungent, laxative, appetizer, light and hot in potency.

Therapeutics: Cough, asthma, fever, chronic rhinitis, myalgia, worm infestation and heart ailments. It pacifies *vāta* and *kapha*.

In the text on *Bhāvprakash Nighantu*, compiled by Dr Vishwanath Drivedi, however there is no mention that *lakśmanā* is useful for treating infertility among women. The author has mentioned some properties for both varieties of *kantkārī*.

Raj Nighantu

Synonyms: *Sitkantarikā, svetā, kśetradutī, sitsimhī, sitksudrā, ksudravārtrākinī, sitā, klinnā, katuvārtrākī, ksetrajā, kapatesvarī, nisnehaphalā, rāmā, sitkantā, mahāūsadi, gardabhi, candrikā, cāndrī, candapuśpā, priyankari, nākulī, durlabhā* and *rāsnā*.

Actions: Pungent, laxative, appetizer, light and hot in potency. It pacifies *vāta* and *kapha*.

Therapeutics: Loss of appetite and eye-ailments.

Use in alchemy: *Lakśmanā* is useful for regulation of *pārada*.

Dhanwantri Nighantu

The author has described *lakśmanā* as variety of *brahatī*.

Synonyms: *Kshetradutī, sitāsnihi, kuvartikā, sushvetā, kantkārī, durlabha* and *mahāūsadi*.

Actions and therapeutics: Bitter, pacifies *Vāta* and *Kapha* and cures indigestion and cough.

Medicinal plants of Solanaceae in *Āyurveda*:

Several medicinal plants of Natural Order Solanaceae found application in *Āyurvedic* formulations. *Kantkārī* (*Solanum xanthocarpum* Schrad et Wendl., *Solanum surattense* Burm.f., *Solanum virginianum* L.), *kākāmacī* (*Solanum nigrum* L.), *brahatī* (*Solanum indicum* L.) and *Solanum trilobatum* L. are some important plants.

Kantkārī (*Solanum xanthocarpum* Schrad et Wendl.)

Syn: *Solanum surattense* Burm.f., *Solanum virginianum* L.

English name: Yellow-berried-night shade

Āyurvedic names: *Dhāvani*, *duśparśa*, *duśpradarisinī*, *kantarikā*, *kantkinī*, *kśudra*, *nidigdihikā* and *vyāghrī*.

Distribution: India, Ceylon and Pakistan.

Botany: It is prickly, much-branched herb, usually spreadig or diffuse; young branches are densly covered with minute star-sahped hair, pricles are yeloow, shining about 1.5 cm long. Leaves are upto 10 cm long, their midribs and other leaves with sharp, yellow prickles. Flowers are purple, about 2 cm long, few togehtehr in small brancjes, opposite to leaves. Fruit are 1.5-2.0 cm, round yellow or pale with green veins.

Chemical composition: It contains alkaloids (scopolamine, solanidine and solasonine), β-sitosterol and steroid saponin (disogenin).

Actions: It acts as antitussive, bronchodilator, bitter, carminative and anodyne.

Therapeutics: *Solanum xanthocarpum* is primarily used in the treatment of chronic bronchitis and bronchial asthma. Given with honey, tulsi (*Ocimum sanctum*), datura (*Datura metal*), and black pepper it can be effective in cases of bronchial asthma. Expressed juice of the berries is used in sore throat. Flowers and fruits are used to resolve burning sensation of the feet. Levees are used to relieve pain locally.

Formulations: *Kantkāryavleha* and *vyāghriharitakī* are important medicinal preparations of *kantkāri*.

Pre-clinical studies: Animal investigations have demonstrated anti-nociceptive, antispermatogenic and hypotensive activities of *Kantkāri*. Fruits and shoots have been reported to be antibacterial.

Clinical studies: Clinical efficacy of *Solanum xanthocarpum* was studied in bronchial asthma in a pilot study. *Solanum xanthocarpum* demonstrated anti-asthmatic effect in terms of various parameters of pulmonary function. However, the effect was less when compared to standard bronchodilators.

Possible representatives of *lakṣmanā*

Ipomoea muricata (L.) Jacq. and *Cynoglossum lanceolatum* Forssk. have been discussed as possible representatives for ancient vedic drug *lakṣmanā*.

Ipomoea muricata (L.) Jacq.

Syn: *Calonyction muricatum* (L.) G. Don, *Ipomoea turbinata* Lag., *Convolvulus muricatus* L., *Ipomoea muricata* Jacq., *Convolvulus colubrinus* Blanco

Common name: Purple moonflower. The seeds of *Ipomoea muricata* are largely imported into Bombay, from Persia, under the name of *tukm-i-nil*.

Distribution: Native to Eastern India and Bangladesh.

Family: Convolvulaceae.

Botany: Perennial vining climber to 30 feet. It is a rare climber, sporting unusual aerial rootless and white, funnel-shaped blossoms in the second year.

Chemical composition: Work done in Philippines has demonstrated presence of indolizidine alkaloids in the seeds. Two resin glycosides and muricatin VII and VIII have been isolated from the seeds

Actions: According to Vedic myth and Hindu practice, the plant is an aphrodisiac and mystically used in tantric lovemaking. Salve rubbed into the forehead [third eye].

Therapeutics: The juice of this plant is employed to destroy bedbugs, and the seeds are said to be identical in their medicinal properties with those of the official plant. *Ipomoea muricata* (L.) Jacq, locally known as 'Tonkin', has been used for generations by the Dominicans in the Philippines for medicinal purposes. The seeds, stems and leaves are said to be effective in treating several types of skin ailments such as chronic and gangrenous wounds, cuts and blisters due to burns.

Pre-clinical studies: Analgesic, antiseptic, antimicrobial and antifungal compounds were also identified.

***Cynoglossum lanceolatum* Forssk.**

Dr Mishra in his work on rare *Āyurvedic* drugs has indicated *Cynoglossum lanceolatum* as possible candidate for *lakśmanā*.

Common name: Purple moonflower. The seeds of *Ipomoea muricata* are largely imported into Bombay, from Persia, under the name of *tukm-i-nil*.

Distribution: Common throughout parts of Africa and Asia. It is distributed in Madagascar also.

Family: Boraginaceae.

Botany: Annual or biennial herb, the taproot 1-8 mm in diam.; stems erect, to c. 1 m tall, with sparse to moderate, appressed to spreading

pubescence. Basal leaves in an evident rosette or smaller plants apparently immediately erect and lacking a basal rosette. Inflorescences terminal, once to several times dichotomously branched cymes, the branches strigillose; flowers on pedicels 1-7 mm long, bisexual; sepals narrowly ovate. Fruits 4.5-5.5 mm broad; nutlets ovoid, 2-3 mm broad.

Chemical composition: Pyrrolizidine alkaloids: cynaustrolin ($C_{15}H_{28}ClNO_4$) and cynaustine.

***Solanum ferox* L.**

Foundation for Revitalization of Local Health Traditions (FRLHT) has mentioned *Solanum ferox* as possible candidate for *lakṣmanā*.

Syn: *Solanum lasiocarpum* Dunal, *Solanum zeilanicum* Blanco

Common name: Tarambulo (Philippines).

Distribution: Philippines, North east India, Malaya and South China.

Family: Solanaceae.

Botany: ***Solanum ferox*** is a small weed, suberect, prickly, hairy herb 0.5 to 1.5 meters in height the leaves are ovate, 15 to 20 cm long, 12 to 23 cm wide, lobed at the margins, and densely covered with stiff woolly hairs above and woolly hairs and prickly spines on the nerves beneath; the lobes are triangular, and 2.5 to 4 cm deep. The flowers are borne on lateral racemes. Fruit is yellow, rounded, 2.5 to 3.5 cm in diameter, densely covered with needle like hairs, and man-seeded.

Chemical composition: Seeds contain fatty acids.

Therapeutics: In Philippines, leaves of the plant are used as cataplasma for indolent swellings. Decoction is used in syphilis. Seeds are useful in toothache.

Conclusion

Proper identification of ancient drug *lakṣmanā* is a debatable topic. The drug has been mentioned as cure for female infertility in ancient texts. Further, it is considered to be type of *kantkārī*. Disogenin has

been reported from various *Solanum* species like *Solanum xanthocarpum* Schrad et Wendl. and *Solanum khasianum* C.B.Clarke. Fruits of these species are in high demand for production of progesterones of natural origin. These are prized drugs for curing conditions like infertility and habitual abortions (Matches with the ancient claim)

Solanum khasianum has white flowers. Ancient texts have not mentioned detailed morphology of *lakśmanā*, but presence of white flowers and prickles have been mentioned. Work on *Solanum khasianum* as possible representative of *lakśmanā* is warranted.

In our view; morphology of *Ipomoea muricata* (L.) Jacq. and *Cynoglossum lanceolatum* Forssk. does not resemble with that of *lakśmanā* described in ancient texts. *Ipomoea muricata* is a climber and *Cynoglossum lanceolatum* is an herb without spines.

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