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SARACA ASOCA (ASHOKA): A REVIEW

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ABSTRACT

Ayurveda is a traditional system of medicine in which herbal therapies were used systematically. Asoka is one of the most sacred and legendry trees of India. Ashokai.e.Saraca asoca (Roxb.) Wilde belonging to Caesalpinaceae subfamily of the Legume is one of the indigenous plants with lots of traditional significance. The plant is a medium sized evergreen tree. The aim of the present review focuses on the detail botanical description, Phytochemical constituents, medicinal uses and pharmacological studies. Saraca asoca has been reported to contain phyto-constituents like flavonoids, steroids, glycosides, saponins, tannins, carbohydrates, proteins along with lot of pharmacological activities such as anti diabetic, CNS depressant, anti-antihelminthic, cardio protective, anti-bacterial, anti-menorrhagic, anti hyperglycemic and anti-oxidant activities, anti-cancer activities.

KEYWORDS: Ashoka, Saraca asoca, Phyto-chemistry, pharmacological activity, medicinal uses.

INTRODUCTION

Plants have been used for medicinal purposes long before prehistoric period. Plant material has been used for the treatment of serious diseases throughout the world before the advent of modern clinical drugs.[1] Ayurveda, the traditional system of medicine continues to be widely practiced on many accounts. Population rise, inadequate supply of drugs, prohibitive cost of treatments, side effects of several synthetic drugs and development of resistance to currently used drugs for infectious diseases have led to increased emphasis on the use of plant material as a source of medicines for a wide variety of human ailments. Herbal medicine has such an extraordinary influence that numerous alternative medicine therapies treat their patients with Herbal remedies, Unani and Ayurveda. Approximately 25 percent of all prescription drugs are derived from trees, shrubs or herbs. Asoka is one of the most sacred and legendry trees of

India. It is found all over India, especially in Himalaya, Kerala, and Bengal and whole south region. Asoka or Ashoka is the Sanskrit word that means "Without sorrow." Ashoka is specially sacred to the Hindu god of Love, Kamadeva, for whom it is worshipped every year on December 27; it is mentioned in Hindu mythology that the Indian philosopher and founder of Buddhism, Gautama Siddhartha (c.563-483 B.C.) was said to have been born under this tree.[2] It is very popular in India and it is native to India.

Saraca indica possesses various activities such as analgesic, antipyretic, fungitoxic, antihelminthic, ant diabetic, larvicidal activity, antimicrobial activity, CNS depressant activity, antiulcer activity, anti-inflammatory activity etc.[3] It is used as spasmogenic, oxytocic, uterotonic, and antibacterial, anti-implantation, anti-tumour, anti progestational, anti-estrogenic activity against menorrhagia and anti-cancer agent.[4] The plant is useful in dyspepsia, fever, burning sensation, colic, ulcer, menorrhagia, leucorrhoea, pimples. This review contains pharmacognostic study of various parts of plant, phytochemical constituents and pharmacological activities of various parts of plant.[3] Saraca asoca has many uses mainly in the medicine to treat the women gynecological disorders, in all types of abnormal discharges per vagina, in uterine inertia, uterine pain, urinary calculus, dysurea, etc. Saraca asoca (ashoka) plant contains the presence of glycoside, flavonoids, tannins and saponins.[2]

Classification[5]

Kingdom : Plantae
Division : Magnoliophyta
Class : Magnoliopsida
Order : Fabales
Family : Caesalpinaceae
Genus : Saraca
Species : asoca

It is distributed in evergreen forests of India up to an elevation of about 750 meters. It is found throughout India. Especially in Himalaya, Kerala, Bengal and whole south region. In Himalaya it is found at Khasi, Garo and Lussi hills and in Kerala region it is found in Palakkad district, Thrisur, Kollam and Kannur districts.[6]

Vernacular Name

This tree has a multitude of names in Indian literature. Some names for the Ashoka tree include.

Latin name: Saraca indica Common name: Asoka, Hempushpa

English name: Asoka

In Sanskrit: Sita-Ashoka, Anganapriya, Ashopalava, Ashoka, Asupala, Apashaka, Ashoka

Other languages: Vanjulam (Hindi), Ashok (Assamese), Oshok (Bengali), Ashoka (Oriya), Asogam (Tamil), Asokam (Malayalam), Asokamu (Telugu), Sokanam (Thai), Kenkalimara, (Kannada), Tengalan (Malay).

Cultivation

Soil & Climate: The plant requires slightly acidic to neutral soils for better growth with medium to deep well drained fertile soils. It grows well in tropical to sub-tropical situations under irrigation.

Nursery raising & planting: The crop can be propagated by seeds and stem grafting. The seedlings are planted in the well manured field during the rainy season.

Thining & Weeding: Weeding and thining of the plants may be done when required usually after 15-30 days for better growth.

Manures, Fertilisers and Pesticides: The medicinal plants have to be grown without chemical fertilizers and use of pesticides. Organic manures like, Farm Yard Manure (FYM), Vermi – compost, Green Manure etc. may be used as per requirement of the species. To prevent diseases, bio- pesticides could be prepared from Neem, Chitrakmool, Dhatura, Cow‟s urine etc.

Irrigation: Normally grown as rainfed crop but for better yield irrigation may be done as per requirement (weekly/ fortnightly).[6]

Parts Used

Bark

Flowers

Seeds

Externally: The drug is used as a local application for pain and in various types of poisoning.

Internally: It is indicated in painful condition of viscera.

Systemic

i. Gastro-intestinal tract – In diarrhea, dysentery, worm infestation and thirst.

ii. Cardiovascular system – The flower is indicated in edema and haemorrhages.

iii. Reproductive system – In menorrhagia, dysmenorrhoea, leucorrhoea and other uterine disorders.

iv. Urinary system – Powdered seed is used in dysuria and stones in the urinary tract.[5]

Fig. 1. Leaves.

Fig. 2. Flowers.

Fig. 3. Ashoka tree.

Fig. 4. Bark.

Phyto – Chemistry

The Phytochemical Study Shows The Presence Of Various Chemical Constituents Of Saraca Indica Plant.

- Bark contains catechole, sterol, tannins, flavonoids, glycosides, leucopetargonidin and leucocyanidin (Yadav et al., 2013), (-) epicatechin, procyanidin p2, 11'deoxyprocyanidin B, leucoperalgonidin and leucocyanidin.[7]
- Dried bark contains five lignin glycosides, lyoniside, nudiposide, 5-methoxy-9-βxylopyranosyl-(–) isolariciresinol, icariside E3 and schizandriside and three flavonoids

epicatechin, epiafzelechin-(4β→8)-epicatechin and procyanidin B2, together with β-sitosterolglucoside.[2]

- The bark extract contains gallic acid, beta guanine, indolylmethyl glucosinolate, trimethyl apigenin, tyramine, beta xanthine, gallic acid hexoside, hypophyllanthin, phloridzin, lignin, galloyl-isorhamnetin, myoinositol, cellotriose, 17-Decarboxy betanin, lyoniside, procyanidin gallate (Yadav et al., 2015). The wax obtained from bark contains n-alkanes (C20-C35), esters (C34-C60) and primary alcohols (C20-C30) and n-octacasanol is also isolated.[8, 9]
- Flower contains oleic, linoleic, palmitic and stearic acids, P-sitosterol, quercetin, kaempferol-3-O-P-D-glucoside,apigenin-7-O-p-D-glucoside,Pelargonidin3,5diglucoside, cyanidin-3, leucocyanidin and gallic acid7. Four anthrocyanin pigments are isolated from flowers; beta and alpha sitosterol are isolated from fixed oil of flowers.
- Seed and Pod contains oleic, linoleic, palmitic and stearic acids catechol, (-) epicatechol and leucocyanidin.[7]

Biological and Pharmacological Activity

- **Antimenorrhagic activity**

Saraca asoca dried bark has been used for Menorrhagia in India. Dried bark as well as the flowers is given as a tonic to women in the case of uterine disorders. S. asoca stem bark is also used to treat all disorders associated with the menstrual cycle. In Sri Lanka, S. asoca bark is used for menstrual disorders and menorrhagia. In India; S. asoca bark is used as a uterine sedative. A study showed that hot water extract administered to human adult females stimulates the uterus similar to ergot, but without producing tonic contraction. It is also used in treating menorrhagia, as an emmenagogue, uterine sedative, and uterine affections as well as used in several preparations related to dysfunction of the female reproductive system.[10-17]

- **Anticancer Activity:** The anticancer principle from Saraca asoca flowers indicated 50 percent cytotoxicity (in vitro) in Dalton's lymphoma ascites and Sarcoma-180 tumour cells at a concentration of 38 mug and 54 mug respectively, with no activity against normal lymphocytes but preferential activity for lymphocytes derived from leukemia patients.[18]

- **Antihelminthic Activity:** The leaves of S. indica show anthelmintic activity. The methanolic and ethanolic extracts of S. indica displayed anthelmintic activity in a dose dependent manner. Analgesic and Antipyretic Activities S. indica leaves extract shows

analgesic activity. Antihyperglycemic and Antioxident Activities S. asoca (Roxb.) de Wilde leaves show of antihyperglycemic and antioxidant activities.[19-22]

- **Cardio protective activity**

Cardio protective activity of alcoholic extract of Saraca indica bark was investigated against cyclophosphamide induced cardio toxicity. Treatment with Saraca indica significantly ($p<0.05$) reversed the status of cardiac biomarkers, ECG, oxidative enzymes and lipid profile in cyclophosphamide induced cardiotoxicity. The histopathology reports, biochemical and ECG support the cardioprotective effect of Saraca indica which could be attributed to antioxidant activity.[23]

- **Antidiabetic activity**

Hypoglycemic effect of the methanolic bark extracts of Saraca indica Linn in normal and streptozotocin induced diabetic rats was evaluated. At dose of 400mg/kg through oral route the extract has shown a significant hypoglycemic activity.[24]

- **CNS Depressant**

The leaves of S. indica were demonstrated to have an anti-depressant activity upon the central nervous system.[25]

- **Analgesic and Antipyretic Activities:** S. indica leaves extract shows analgesic activity.[26]
- **Anti hyperglycemic and Anti-oxidant Activities:** S. asoca (Roxb.) de Wilde leaves show of anti hyperglycemic and antioxidant activities.[27]

Uses of Asoka in Ayurveda[28-32]

Some of its uses as described in various Ayurvedic texts are:

1. Cold water decoction or cold water extract milk decoction of asoka taken in the morning for the treatment of asragdara.
2. Decoction of bark of asoka in milk for the treatment of severe uterine bleeding.
3. Powdered bark of asoka with honey for the treatment of pradara (discharges per vaginum) or asragdara (menorrhagia).
4. Asokarishta is indicated for the treatment of hemorrhage, hemorrhoids, anorexia, edema, fever, etc.
5. Asokaghrita is indicated for the treatment of backache, pain of uterine origin, and anemia.
6. In dysuria and anuria due to stone, seeds of asoka may be used with cold water.

7. Asoka is a good uterine tonic and keeps the menstruation clear. In pregnancy Asokaghrita does not cause abortion.
8. Asoka bark decoction and Asokaghrita indicated for the treatment of dysmenorrhea.
9. Local application -Medicinal ghrita prepared with herbs having asoka as a chief ingredient is used for the treatment of gulma (localized abdominal tumor/swelling/lump) especially kaphaja gulma (swellings/lump having kapha predominance).
10. Enteral use -Asoka in combination with other medicines is recommended for the treatment of various diseases such as kaphaja gulma, kapha vata janya vibandha (constipation due to kapha vata vitiation), kustha (skin diseases), pliha (splenic enlargement), udara roga (peritonitis), and yoni roga (genito-urinary disorders).
11. Asoka is also indicated for the treatment of cough.
12. It can be used to reduce meda (fatty tissues in body) and kapha.

CONCLUSION

Saraca indica is highly regarded as a universal panacea in the ayurvedic medicine .It is one of the universal plant having medicinal activities. Ashoka has been widely used for curing various ailments due to its therapeutic potentials. This versatile plant is the source of various types of compounds and the bark, leaves, flowers and seeds of the plant are of medicinal value. Ashoka is ancient and reliable source of medicine and used in many pharmacological activities like anti cancer, anti- menorrhagic, anti-oxytoxic, anti–microbial activity and have extend uses in Ayurveda, Unani and Homeopathy. The scientific studies have proved most of the claims of traditional medicines. Saraca asoca should be emphasized for the control of various diseases. However, further detailed clinical research appears worthwhile to explore the full therapeutic potential of this plant in order to establish it as a standard drug.

REFERENCES

1. Anitha B, Mohan R, Athiperumalsami T & Suthaa S. Ethnomedicinal plants used by the Kanikkars of Tirunelveli District. Tamil Nadu, India to treat skin diseases. Ethnobotanical leaflets, 2008; 12(1).
2. Pradhan et al. Saraca indica (Ashoka): A review, Journal of chemical and pharmaceutical research, 2009; 1(62).
3. http:// www. journaldatabase.org/articles/review_on_sara ca_indica_plant.html.
4. Srivastava N, Bagchi D, Srivastava K. International Journal of Crude Drug Res., 1988; 26(2): 65.

5. Biswas K, Debnath K. Indian Journal of History of Science, 1972; 7(2): 99-114.
6. Warrier P K, Nambier P K, Ganapathy P M. Some important medicinal plants of the Western Ghats. India: A Profile. International Development Research Centre, New Delhi, 2000; 3: 343-360.
7. Yadav G, Kumar V, Thakur N, Khare P. Locomotor activity of methanolic extract of Saraca indica bark. Advances in Biological Research, 2013; 7(1): 01-03.
8. Joshi S G, Medicinal Plants: Oxford and IBH Publishing (p) Ltd, 2004.
9. Rangari VD. Pharmacognosy and Phytochemistry. Career Publication, 2012; Nashik, 2(2): 269-271.
10. Bhandary M, Chandrasekhar K, Averiappa K. Journal of Ethno pharmacology, 1995; 47(3): 149-158.
11. Kumar Y, Haridasan K, Rao R. Bull Bot Surv India, 1980; 22(4): 161-165.
12. Middelkoop T B, Labadie R P. Zeitschrift Naturforschung series, 1985; 40(6): 855-57. Availablefrom:ttps://www.google.com/search?q=Zeitschrift++Naturforschung+series+&ie=utf-8&oe=utf-8&client=firefox-b.
13. Middelkoop T B, Labadie R P.1985. Naturforch Series. 718: 523-26, Available from: https://www.google.com/search?q=13.%09+Middelkoop+T+B%2C++Labadie+R+P.+Z+Naturforch+Series.+718%3A+523-26%2C+1985+&ie=utf-8&oe=utf-8&client=firefox-b
14. Satyavati G, Prasad D, Sen S, Sen P. Indian Journal of Medicine Research, 1970; (58): 947.
15. Saha J, Savini E, Kasinathan S. Indian Journal of Medicine Research, 1961; (49): 130-151.
16. Karnick C R. 1970. Acta Phytother, 17: 181, Available from ttps://www.google.com/search?q=16.%09+Karnick+C+R%2C+Acta+Phytother%2C+17%3A+181%2C+1970&ie=utf-8&oe=utf-8&client=firefox-b.
17. Khan M, Khan T, Ahmad Z.Fitoterapia, 1994; 65(5): 444-446.
18. Kaur J, Misra K. Journal of Indian Chemical Society, 1980; 57(12): 1243.
19. KP Manjunath, H Shivakumar, T Prakash, KS Patil, A. Veeranagouda, Jayakumarswamy, Venkatesh, R. Nagendra Rao, Anthelmintic Activity of Roots of Swertiachirata. Ind J Nat Prod, 2006; 1: 8-10.
20. S Nayak, NM Sahoo, CK Chakraborti. Phytochemical Screening & Anthelmintic Activity Study of Saraca indica leaves extracts. IRJP, 2011; 2(5): 194-97.
21. P Bhadauria, B Arora, A N Sharma, V Singh. A Review on Saraca Indica Plant; IRJP, 2012; 3(4): 82.

22. S Kumar, S Narwal, D Kumar, G Singh, S Narwal, R Arya. Evaluation of Antihyperglycemic and Antioxidant Activities of Saraca Asoca (Roxb.) De Wild Leaves in Streptozotocin Induced Diabetic Mice. Asian Pacific Journal of Tropical Disease, 2012; 2(3): 170-76.
23. VN Swamy, Patel UM, Koti BC, Gadad PC, Patel NL. Thippeswamy. Cardioprotective effect of Saraca indica against cyclophosphamide induced cardiotoxicity in rats: A biochemical, electrocardiographic and histopathological study. Indian J Pharmacol, 2013; 45(1): 44-48.
24. Preethi F, Fernandes, Jennifer, Pricilla K. Hypoglycemic activity of Saraca indica Linn barks. Journal of Pharmacy Research, 2010; 3(3): 491.
25. Jana G, Verma S, Sen R, Chakraborty S, Sachan A. Journal of Pharma science research, 2010; 2(6): 338-343.
26. P Bhadauria, B Arora, A N Sharma, V Singh. A Review on Saraca Indica Plant: IRJP, 2012; 3(4): 82.
27. S Kumar, S Narwal, D Kumar, G Singh, S Narwal, R Arya. Evaluation of Anti-hyperglycemic and Antioxidant Activities of Saraca Asoca (Roxb.) De Wild Leaves in Streptozotocin Induced Diabetic Mice. Asian Pacific Journal of Tropical Disease, 2013; 2(3): 170-176.
28. BG Apte, V Madhava, V Madhava, P Adhikara.1943. Bombay: Anand Ashram Mudralaya, 494.
29. Chakradatt Book of Ayurvedic Pharmacopea, ed. J.P. Tripathi, Banaras: Chaukhambha Sanskrit Series, Chapter, 1946; 5: 270.
30. Yoga Ratnakara, chapter: Stree Rogadhikar /21, Banaras: Chaukhambha Sanskrit Series, 840-41.
31. Bhaishajya Ratnavali, Vidyotini Hindi Vyakhya by Kaviraj Ambikadatt Sahtri, Varanasi: Chaukhambha Sanskrit Series, 1999; 66: 114-118.
32. Kayadeva Nighantu, ed. Surendra Mohan Ayurvedacharya, Dayanand Ayurveda College, Oushadhivara, 1085 sloka, 295, 1927.