

# Ethnobotanical study of Medicinal plant Indian Sarsaparilla *Hemidesmus indicus* (L.) used to various diseases and disorder in Pune district Maharashtra

1.SALMAN GULAB SHAIKH

Assistant professor

ANNASAHEB AWATE COLLEGE MANCHAR. TEL. AMBEGAON DIST. PUNE.

Email: [shaikhsalaman1812@gmail.com](mailto:shaikhsalaman1812@gmail.com)

2. APEKSHA NITIN WAGHULE

Research Associate

ANNASAHEB AWATE COLLEGE MANCHAR. TEL. AMBEGAON DIST. PUNE.

Email: [waghulean08052000@gmail.com](mailto:waghulean08052000@gmail.com)

## ABSTRACT

From the primordial times' plants are standard as a chief resource for mankind. Medicinal plant is being widely used as a medicine for various diseases. *Hemidesmus indica* (Indian sarsaparilla, Family - Asclepiadaceae) is widely use in traditional system of Medicine. *Hemidesmus indicus* (Anantmool) is a significant medicinal plant, which is described in Ayurvedic literature. The field of Ayurvedic Science is acquiring more importance and prevalence all through the world because of its amazing medicinal uses. According to World Health Organization, 80% of individuals depend on natural drugs for some aspect of their primary healthcare. Sarsaparilla. It is an aromatic, long-rooted plant that belongs to the Apocynaceae family. The plant is widely found in deciduous forests, uncultivated lands and moist hedges. The medicinal plant is used against a variety of diseases due to the presence of various phytochemicals like Hemidesmol, Resin, Glucoside, Tannin and Resin. The plant parts, roots and rhizome have been utilized for hundreds of years in Ayurvedic medication for relieving countless diseases. It has been reported as useful in biliousness, blood diseases, dysentery, diarrhoea, respiratory disorders, skin diseases, leprosy, leukoderma, itching, bronchitis, Asthma. eye diseases burning sensation, loss of Appetite, act as an antioxidant, hepatoprotective, helicobactericidal properties. The present work aims overall Ayurvedic and modern therapeutical information of *Hemidesmus indicus* with various reported Ayurvedic literature and scientific pharmacological studies. In this review article, we aim to represent an exhaustive update on the ethnobotanical review, phytoconstituents review, Pharmacological review. The studies represent an updated review on traditional, pharmacological,

phytochemical feature on *H. indicus* with toxicity knowledge This plant is not widely utilized. Hence, this review was committed to exploring the hidden potential and many uses in the direction of mankind.

Keywords- *Hemidesmus indicus*, Anantmool,

## Botanical Classification of *H. indicus*

| Taxonomical Rank | Taxon             |
|------------------|-------------------|
| Kingdom          | Plantae           |
| Phylum           | Tracheophyte      |
| Class            | Magnoliopsida     |
| Order            | Gentianales       |
| Family           | Apocynaceae       |
| Genus            | <i>Hemidesmus</i> |
| Species          | <i>Indicus</i>    |

## INTRODUCTION

From ancient times, humans can find so many drugs from plants to treat various diseases and ailments. Ayurveda is the oldest Indian indigenous medicine system, probably with its roots in the Indus Civilization. In the Vedic period, the Osadhisukta of the Rigveda is the oldest documented knowledge about plants and herbal medicines. The indigenous knowledge about plants and plant products is rather detailed and sophisticated. It has evolved into a separate shastra (branch of learning) called Dravya-Guna Vigyan Shastra. In addition to this, over 50,000 formulations are believed to be existing in the folk and tribal traditions. These points to the deep passion for an exhaustive knowledge of medicinal plants. from time immemorial.

## PHOTOPLATE

*HEMIDESMUS INDICUS* (L.)

**Habitat:** *Hemidesmus indicus*, commonly known as Indian sarsaparilla, is a perennial, twining, or prostrate shrub native to the Indian subcontinent. Here's a detailed look at its habitat. Native to India, Sri Lanka, Bangladesh, and Pakistan. Widely found throughout peninsular India, especially in Tamil Nadu, Karnataka, Andhra Pradesh, and Maharashtra.

**Morphology Leaf:** Leaves are opposite, short-petioles, very variable, elliptic-oblong to linear-lanceolate (1 in x 0.6-1.7 in.), often variegated with white above, sometimes silvery-white and pubescent beneath.

**Stem:** There are elongated and cylindrical.

**Root:** Roots are woody, aromatic, cylindrical, 0.2-0.7 inch or more thickness, somewhat tortuous, seldom branched, brownish or purplish, with a short fracture at the periphery and fibrous at the centre.

**Flower:** Flowers are greenish outside, purplish inside, crowded in subsessile, axillary cymas, clothed with numerous ovate, acute imbricating bracts. Calyx is 2.5 mm long, globous outside, lobes 1.5 mm long, ovate, acute, and has numerous ciliolate margins. Corolla 5-6 mm long, greenish outside, purple inside; tubes very short; lobes velvet, fleshy 4 mm long, ovate-oblong, acuminate. Follicles 10-15 cm by 6 mm, cylindrical, tapering to a point at the apex, straight or sometimes slightly curved striate, globous.

## PHARMACOLOGICAL STUDY

The first pharmacological study on the diuretic effects of *H. indicus* root was conducted in 1962. It has a wide range of ethnomedical uses, the most important of which is probably the treatment of dysentery and diarrhoea. Traditionally, the water extract is used for treating diarrhoea and dysentery, which has beneficial effects in addition to rehydration. It is also used to treat other infections, skin diseases, menorrhagia, postpartum convalescence, peptic ulcer and stomach pain, fever and headache pain and Inflammations, mouth sores, venereal diseases including gonorrhoea and syphilis, impotence and as a blood purifier, refreshing tonic and appetite stimulant and to promote health and vitality, neutralizing snake bites and scorpion stings.

In Ayurveda it is considered as one of the Ras Ayana plants. In Ayurvedic tradition, this plant is considered effectual as an antiarthritic and antirheumatic remedy. Ethanolic extract of root was found to be antihepatotoxic, in Ayurveda the root of *H. indicus* is considered to be demulcent, diaphoretic, diuretic and tonic. It is useful in syphilis, leukoderma, hemicrania, rheumatism and also in liver and kidney disorders.

The Indian System of Medicine (ISM): This is a traditional system of medicine that encompasses three systems, namely Ayurveda, Siddha and Unani, practiced by Vaidya's, Siddhas and Hakims, respectively. The medicines (or) formulations that come under Ayurveda, Siddha, and Unani treatment system are called the Indian System of Medicines. The Drug and Cosmetic Act defines the ISM as "Ayurvedic, Siddha and Unani drug includes all medicines, intended for internal or external use in the diagnosis, treatment, mitigation or prevention of diseases or disorder in human beings or animals.

Modern Drugs from Ayurveda: Ayurveda, the traditional Indian system of medicine, is as old as the Indian culture and civilization. The earliest-recorded knowledge about Ayurveda is found in the Rigveda and the Atharvaveda, both of the second millennium BC. The Atreya Samhita is perhaps the oldest medical book globally; it survives from Takashia University, going back to the mid-I Millennium BC. The Atharvaveda lists eight divisions of Ayurveda: internal medicine, surgery of head and neck, ophthalmology, surgery, toxicology, psychiatry, paediatrics, gerontology or the science of rejuvenation, and the science of fertility. At

about 500 BC at the University of Banaras, Sushruta, a surgeon, who developed the operative techniques of rhinoplasty (plastic surgery), wrote the Sushruta Samhita, which

Indian Ayurvedic system certainly has given birth to number of important and modern drugs, viz. ajmalicine, reserpine, ergocriptine, L-dopa, cardiac glycosides, sennosides etc 6. The importance of plants as a source of useful antihypertensive drugs was supported by the isolation of reserpine from *Rauwolfia serpentina* by Muller et al in 1952. Veratrum alkaloids were other antihypertensive agents from plant sources 7. Many medicinal plants have been reported to have anti-inflammatory activity; notable among these are *Mesua ferrea*, *Azedarachata indica*, *Glycyrrhiza glabra*, *Cyperus rotandus*, and *Curcuma longa*.

## PHYTOCHEMICAL STUDY

Phytochemical studies *H. Indicus* exists in two forms, first one is var. *indicus* and another one is var. *pubescens* although their constituent is same var. *pubescens* contains higher concentration of  $\beta$ sitosterol and tannins wherever. *indicus* contains higher concentration of phenols and free amino... Leaves: It possesses 2.5% of tannins, coumarin olenids Heidemann, Hemidesmus 1, Hemidesmus 2. Leaves of *H. Indicus* contain cardiac glycosides, Tannins, Saponins. Stem: It contains glycosides like hemidine and indicine. Flower: Flowers of *H. indicus* contains glycosides, hyperoxide, isoquercetin, and rutin, flavonoid. Root: Roots of *H. indicus* are predominant source of several phytoconstituents and their therapeutic values. It has been used as a tonic as well as diuretics. It contains hemidesmol, resin and glucoside, tannin and resin, lupeol,  $\beta$ -sitosterol,  $\alpha$ - and  $\beta$ amyrins, lupeol,  $\alpha$ -amyrin, lupeol acetate,  $\beta$ -amyrin acetate, hexa-Tricon ate acid, lupeol 1- occasional, steroid, terpenoid, flavonoid, and saponin.

*H. indicus* contains 80% of crystalline material glucose hemidesmol, 2-hydroxy-4- methoxy benzaldehyde, glucoside, resin acid, sterol, and tannins . Quantitative evaluation of crude chemical components in *H. indicus* root extract gave the following results: Tannin 3.06%, saponin 12.55%, flavonoid 1.12%, alkaloid 1.23%, terpenoid 0.79%, coumarin 0.91% phenol 1.1%, the average amount of lupeol oxononanoates in root powder is 36.5 mg/g. *H. Indicus* contains many biologically active compounds, including a new series of coumarin-lignans called Hemidesmus, and steroidal glycosides called hemidesmosomes A-C . There are no clinical data demonstrating the effectiveness of *H. indicus* root extract in [ijppr.humanjournals.com](http://ijppr.humanjournals.com) Citation: Shravani R Kakadu et al. Aprahamian, 2024; Vol. 30 (2): 451-467. 459 humans or any specific indication. Extracts and components of *H. indicus* roots have potential antioxidant and antibacterial activities, as shown in Table 3, with many effects observed, e.g., hepatoprotective, cardioprotective, neuroprotective, hypoglycaemic, and anti-inflammatory and anti-diabetic properties, can be explained to a certain extent by the antioxidant properties of the extract. Terpenoids, flavonoids, coumarin lignans, aromatic aldehydes, saponins and other compound have antioxidant effects.

**CONCLUSION:**

This article represents the pharmacological, phytochemical, ethnobotanical. This review also displays a list of marketed formulas where *H. indicus* is an active ingredient. So, further investigation of this plant *H. indicus* which, will be helpful for the study of biological activities.

**ACKNOWLEDGEMENT:**

I am honoured to thank the principal of The Anna Saheb Awate College, Head of the department. Student of M.Sc. & friends for encouragement and guidance.

**REFERENCES:**

1. Tariq O, Siddiqui and Javed Ahmed: Vitamin C content of Indian medicinal plants, review literature. Indian Drugs 1985; 23(2): 72.
2. Modi A: Scope of Indigenous drugs in Modern Medicine. The Eastern Pharmacist 1984; 24(315): 47-56.
3. Ayurveda: the Traditional Indian Medicine System and its Global, Dissemination by D. P. Agrawal & LaFt Tiwari.
4. Farnworth NR: A computerized data base for medicinal plants. The Eastern, Pharmacist 1985; 28(326): 53-5.
5. Sampath K and Lakshmanan S: Indian system of medicine. The Eastern, Pharmacist 2001; 21-4.
6. Naik SR: Plant Derived Drugs. The Eastern Pharmacist 1986; 36: 35-9.
7. Srimal, Shukla R: Recent Research in India on Indigenous Plants for the, treatment of hypertension. Indian Drugs 1987; 24(9): 419-22.
9. Pandey MM, Rastogi S and Rawat AKS: Indian Herbal Drug for General.
10. Healthcare: An Overview. [Online]. 2008; [13 screens]. Available from: URL:
11. The flora of Orissa, vol-II, Orissa forest Development corporation Ltd. April 1995.H.O.SaxenaS ,M.Brahman.
12. Nandakarni KM and Nandakarni AK: Indian Meteria Medica, Bomboy Popular Prakashan 1: 619.
13. [https://en.wikipedia.org/wiki/Hemidesmus\\_indicus](https://en.wikipedia.org/wiki/Hemidesmus_indicus)
14. Gaurav A. Panchal, Shital J. Panchal and Jagruti A. Patel: Department of Pharmacology Institute of Pharmacy, Nirma University of Science and Technology, Sarkhej-Gandhinagar Highway, Ahmedabad-382481, India.
15. Anonymous. The Ayurvedic Pharmacopoeia of India, Government of India, Ministry of Health and Family Welfare, Dept. of ISM and Homoeopathy, New Delhi 2001; 107-108.

16. The Wealth Of India Raw Marerials (H-K), Published by Council of Scientific& Industrial Res New Delhi 2001; 34.

17. Khare CP: Encyclopedia of Indian Medicinal Plants. New York Springer 2004; 245-247.

18. Gupta NS: The Ayurvedic System of Indian Medicine, New Delhi, Bharatiya Kala Prakashan 2006; 1: 96-97.

19. Mehta A, Sethiya NK, Mehta C and Shah GBI: Anti-arthritis activity of roots of *Hemidesmus indicus* R.Br. (Anantmul) in rats. Asian Pacific Journal of Tropical Medicine 2012; 130-135.

20. Zarei M and Javarappa KM: Anticarcinogenic and cytotoxic potential of *Hemidesmus indicus* root extract against Ehrlich Ascites tumor. Der Pharmacia Lettre 2012; 4: 906-910.

21. Pandey KK, Dwivedi M. Urinary Tract Infection and its Management by Renalka. The Antiseptic 2001; 98: 295-296.

22. Das S, Prakash R and Devaraj SN: Anti-diarrhoeal effects of Methanolic root extract of *Hemidesmus indicus* (Indian Sarsaparilla)- an *in-vitro* and *in-vivo* study. Indian Journal of Experimental Biology 2003, 41: 363-366.

23. Dutta MK, Sen TK and Sikdar S: Some preliminary observations on anti-inflammatory properties of *Hemidesmus indicus* in rat. Indian Journal of Pharmacology 1982; 14: 78.

24. Gupta PN: Antileprotic action of an extract from Anantamul. (*Hemidesmus indicus* R. Br.) Indian Journal of Leprosy 1981; 53: 354-359.

25. Ravishankara MN, Shrivastava N, Padh H and Rajani M: Evaluation of antioxidant properties of root bark of *Hemidesmus indicus* R. Br. (Anantmul). Phytomedicine 2002; 9: 153-160.

27. Murti PBR, Sheshadri TR. A study of the chemical components of the roots of *Decalepis hamiltonii* Part III: Comparison with *Hemidesmus indicus* (Indian Sarsaparilla); Proc. Indian Acad. Sci 1941; 13: 399-403.

28. Padhy SN, Mahato SB, Dutta NL. Triterpenoids from the roots of *Hemidesmus indicus*. Phytochemistry 1973; 12(1):217-218.

29. Anonymous. The Wealth of India. Raw materials, CSIR, New Delhi, India, III, V, X; 1997.

30. Zhao Z, Matsunami K, Otsuka H, Negi N, Kumar A, Negi DS. A condensed phenylpropanoid glucoside and pregnane saponins from the roots of *Hemidesmus indicus*. J Nat Med 2014; 67: 137-142.

31. Prakash K, Sethi A, Deepak D, Khare A, Khare MP. Two Tariq O, Siddiqui and Javed Ahmed: Vitamin C content of Indian medicinal plants, review literature. Indian Drugs 1985; 23(2): 72.

31. Modi A: Scope of Indigenous drugs in Modern Medicine. The Eastern Pharmacist 1984; 24(315): 47-56.

32. Ayurveda: the Traditional Indian Medicine System and its Global, Dissemination by D. P. Agrawal & Lalit Tiwar.

33. Farmworth NR: A computerized data base for medicinal plants. The Eastern, Pharmacist 1985; 28(326): 53-5.
34. Sampath K and Lakshmanan S: Indian system of medicine. The Eastern, Pharmacist 2001; 21-4.
35. Naik SR: Plant Derived Drugs. The Eastern Pharmacist 1986; 36: 35-9.
36. Srimal, Shukla R: Recent Research in India on Indigenous Plants for the, treatment of hypertension. Indian Drugs 1987; 24(9): 419-22.