

HEMIDESMUS INDICUS (ANANTMOOL): RARE HERB OF CHHATTISGARHSUMONA CHAKRABORTTY^a AND RACHANA CHOUDHARY^{b1}^{ab} Department of Microbiology Shri Shankaracharya Mahavidyalaya Sector-6, Bhilai (C.G.)
India**ABSTRACT**

The study and use of medicinal properties of plant is called herbal medicine. Plants have the ability to synthesize a wide variety of chemical compound that are used to perform importance biological functions and to defense against attack from insect, fungi, bacteria etc. Ethanobotany is recognized as an effective way to discover future medicine, 80% of these have an ethnomedical use related to current use of the active element of the plant. *Hemidesmus indicus* (anantmool) is being used widely in ayurvedic medicine. The history of its medicinal importance dates back to ancient times. Anantmool means “the eternal root” as the root of the plant spreads for a long way underground. The roots have a sweet smell like camphor. The present review deals with studies under taken in various aspects of this plant in the areas of ayurvedic properties, morphology, anatomy, chromosomes number, vegetative / seed propagation, tissues culture along with medicinal properties.

Key words:- Herbal medicine, *Hemidesmus indicus*.

Herbal preparations are effectively and extensively used for their medicinal properties and have become increasingly popular worldwide (Fisher P *et al.*, 1994, Astin JA *et al.*, 1998) Herbal medicines generally have fewer side effects than synthetic compounds and their effectiveness can be improved by modern pharmacological methods (Wilasrusmee C *et al.*, 2002) Several plants used in the traditional system of medicines (Sasidharan N *et al.*, 2004) *Hemidesmus indicus* a well-known drug in the ayurveda system of medicine. *Hemidesmus indicus* commonly known as Indian Sarsaparilla is a diffusely twining undershrub having numerous slender wiry laticiferous branches with purplish brown bark. This plant is found throughout India growing under mesophytic to semi dry conditions in the plains and up to an altitude of 600 m. It is quite common in open scrub jungles, hedges, uncultivated soil etc. It is found in India, Sri Lanka, Pakistan, Iran, Bangladesh and Moluccas (Sasidharan, 2004; Siddique *et al.*, 2004; Anonymous, 2005; Nayar *et al.*, 2006).

Vernacular Names

Arabic: Zaiyana, Ausaba lunnara; Beng: Anantmool; Eng.: Indian Sarsaparilla; Hindi: Magrabu, Salsa, Kapooree, Anantamool; Konkani: Dudvali; Mar.: Anantmool, Upalsari, Dudhasali; Ori.: Onontomulo; Persian: Ushbanindi, Yasmine barri,

Aushbahe nindi; Punj: Anantmool; Sans.: Anantamula, sariva, naga jihva, gopakanya;.

Hemidesmus indicus was formerly placed under the family Asclepiadaceae, but recently based on the pollinial characters it was transferred to Periplocaceae (Sharma *et al.*, 2000).

Ayurvedic Pharmacodynamic properties:

Rasa : Madhur (Sweet), Tikta (Bitter)

Guna : Guru (Heavy), Snigdha (Oily)

Virya : Shita (Cold)

Vipaka : Madhur (Sweet)

Doshakarma : Tridoshashamak (Alleviate all the three Dosha- V, P, K)

Morphology

The stems and branches which twine anticlockwise are profusely laticiferous, elongate, narrow, ridged at the nodes. Leaves: simple, petioled, exstipulate, opposite, entire, apiculate acute, dark green above but paler and sometimes pubescent

below. Leaves of the basal parts of the shoots are linear to lanceolate. Flowers: Greenish yellow to greenish purple outside, dull yellow to light purplish inside, calyx deeply five lobed, corolla gamopetalous, about twice the calyx, Stamens five, inserted near base of corolla with a thick coronal scale. Stamens five, inserted near base of corolla with distinct filaments and small connate oblong anthers ending in inflexed appendages. Pistil bicarpellary, ovaries free, many ovuled with distinct styles. Fruit two straight slender narrowly cylindrical widely divergent follicles. Seeds many, flat, oblong, with a long tuft of

white silky hairs (Aiyer, 1951; Prasad and Wahi, 1965; Warriar *et al.*, 2000).

Anatomy

Transverse section of the fresh root is circular with a fairly regular outline. It shows a slightly compact porous strand of wood at the centre enveloped by a massive cream coloured starchy tissue and a peripheral strip of light reddish brown rind (Aiyer, 1951; Sharma *et al.*, 2000; Warriar *et al.*, 2000).

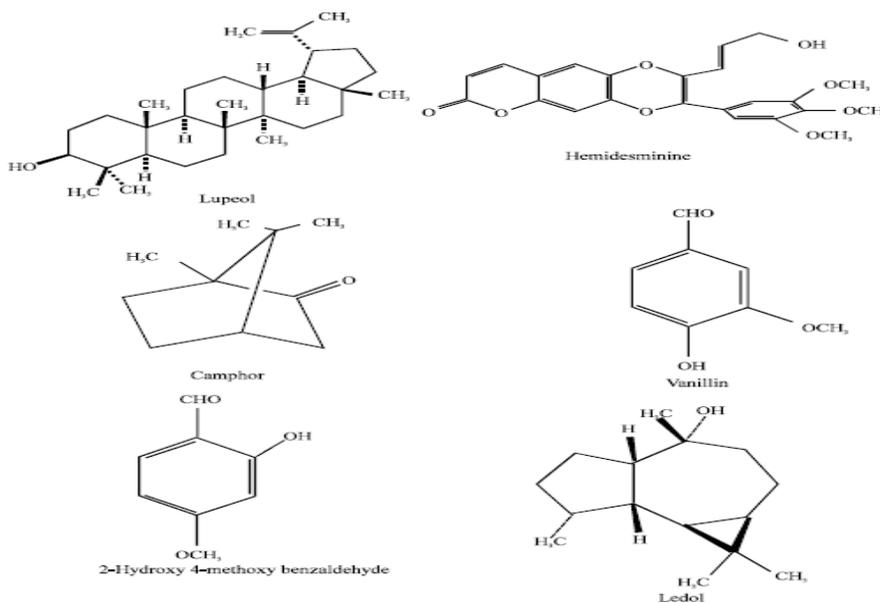


Fig.1: Chemical structures of major compounds present in *Hemidesmus indicus*

Chromosome No: 2n = 22 (Jagtap and Singh, 1999) Chemical Constituents

Different parts of the plant especially root contain various compounds (Fig. 1) such as 2-hydroxy 4-methoxy benzaldehyde, 4-hydroxy 3-methoxy benzaldehyde, (Chatarjee and Bhattacharya, 1955; Nagarajan *et al.*, 2001; Nagarajan and Rao, 2003).

Propagation Vegetative/Seed

Detailed studies on seed propagation have been done by Warriar *et al.* (2000). The seed germination percentage was 95.33. They have

reported the occurrence of albino seedlings (1%) in *H. indicus*. According to them this plant does not respond satisfactorily to vegetative propagation by stem/root cuttings even after treatment. Ramulu *et al.* (2005) have reported the vegetative propagation of *H. indicus* by stem cuttings.

Tissue Culture

Malathy and Pai (1998) have reported the *in vitro* propagation of *H. indicus*. Micropropagation was achieved in Murashige and Skoog's basal Medium (MS) supplemented with benzyladenine (3 mg L⁻¹). Micropropagation and production of 2-hydroxy 4-methoxy benzaldehyde using root cultures

of *H. indicus* was reported by Sreekumar *et al.* (1998, 2000). Ramulu *et al.* (2003) have reported the regeneration of plants from root segments derived from aseptic seedlings. Improvement in clonal propagation of *H. indicus* through adenine sulphate has been reported by Neetha *et al.* (2003). Neetha *et al.* (2005) have reported *in vitro* biosynthesis of antioxidants such as lupeol, vanillin and rutin from *H. indicus* cultures. Somatic embryogenesis and **plant regeneration** from leaf cultures of *H. indicus* have been reported by Swaroopa and Dixit (2006).

Useful parts: Roots.

Chemical Composition

It contains essential oil, Starch, Coumarin, Tannic acid, Triterpenoid saponins

Medicinal Properties

It is an alternative, diaphoretic, depurative, diuretic, immunosuppressant, aphrodisiac, refrigerant and tonic action. It is also antisyphilitic, anti-leucorrhoeic, galactogenic, anti-diarrhoeal, anti-rheumatic, febrifuge. It helps in indigestion. It improves quality and quantity of sperms. It helps in curing dyspepsia, dysentery, cough, bronchitis, leucorrhoea, uterine hemorrhage, dysuria, and blood diseases. The drug is also useful in skin diseases, fever, thirst, vomiting, poisoning, anemia, and debility (Anonymous, 2001).

Medicinal Uses: (Anonymous, 1989)

Skin: It helps in treating Eczema, Erysipelas, Psoriasis, and Urticaria from heat and aggravated Pitta. It 'cleans' the blood, stops itching and reduces supperation. The root powder is used to treat STDs that are damp and hot.

Urinary: Urinary infections with dark red, cloudy, painful urination; cystitis, urethritis, kidney infections, prostatitis.

Nerves: Its alterative and purificatory nature extends to the mind, hence its used in disturbed, angry or irritated emotions from high Pitta. It reduces Vata indirectly by calming the flames of Pitta.

It is used in certain bacterial conditions such as Gonorrhoeal neuralgia, Syphilis, Venereal disease.

It is used in Auto immune disease such as Rheumatism, Rheumatoid arthritis and also used in nephritic disorders.

It is also used in mouth sores of children.

Its root powder is effective in female disorders like Pradara Roga especially in Shweta Pradar (leucorrhoea).

Hair therapy

Anantmool used in ayurvedic medicine to treat hair problems, skin disease, lesion and arthritis. It power can be used in as a paste mixed with hot water. Clear heat and inflammation from the skin used in eczema. Erysipelas, urticaria from heat. It cleans the blood and stop itching.

IgG production

Extract of *H. indicus* has a stimulatory effect in terms of IgG production and ADA activity of human peripheral blood lymphocytes, *in vitro*. An immunomodulatory activity of *H. indicus*, related to IgG secretion and ADA activity. The herbal extract has promote the release of IgG by lymphocytes and also the ADA activity (Kainthla R P, Kashyap Effect of *Hemidesmus indicus* (Anantmool) extract on IgG production and adenosine deaminase activity of human lymphocytes *in vitro*. Indian J Pharmacol 2006;38:190-3)

Ethnobotany/Traditional Knowledge

Use of this plant against leucorrhoea at Bargarh district in Orissa and Sattordem Village of Goa has been reported (Sen and Behera, 2000; Kamat, 2001). Antipyretic use of this plant has also been reported (Singh and Kumar, 1999). Siddique *et al.* (2004) have reported the use of *H. indicus* among the local people and herbal practitioners of Barind Tract of Bangladesh against diarrhoea, rheumatism, fever, headache, asthma, eye disease and wounds. Rajasab and Isaq (2004) have reported the use of *H. indicus* among the tribes of north Karnataka. Ayyanar and Ignacimuthu (2005) have reported traditional uses of *H. indicus* among the Kani tribals in Kouthalai of Tirunelveli hills, Tamil Nadu. Uses of *H. indicus* among the Korku tribe of Amravati district of Maharashtra have been reported by Jagtap *et al.* (2006).

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