



**A review article on species used as *sariva* in different regions of india:
hemidesmus indicus, *ichnocarpus frutescens*, *decalepis hamiltoni* and
*cryptolepis buchmanani***

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ABSTRACT:

India is enriched in diversity of flora since ages. The ancient professionals have kept records of their work related to the plants. These works are a source of research today. *Sariva* is a well known herb since it is most commonly used in Ayurveda for its various therapeutic uses. Later on controversies erupt as locals in different parts of India used different plant species are considered in the name *Sariva* across India. From the data available, four species are being used as *sariva* in different regions. *Hemidesmus indicus* is a botanical name of true *sariva*. *Cryptolepis buchmanani* and *Ichnocarpus* are also collectively known as *Sariva* in ayurveda. In south India *Decalepis hamiltonii* is being used as true *Sariva*. *Sariva* is a widely used herbal drug in the management of cognitive disorders from the times of *Aacharya Charaka* till today. *Hemidesmus indicus*, also known in ancient Ayurvedic medicine as "*Sugandi*" or "*Sariva*", has been revealed for its medicinal properties since nearly a thousand years. True *Sariva* traditionally used in various preparations. There is a greater chance of real material been adulterated or substituted by similar looking, cheaper material. Therefore present study is launched to carry out a complete pharmacognostic evaluation of *Hemidesmus indicus* and its possible adulterants or substitutes which are being used as true *sariva* in different regions of India. These diagnostic characters will be useful to screen out original crude drug material at the point purchasing.

Keyword: *Hemidesmus indicus*, true *Sariva*, *Cryptolepis buchmanani*, *Ichnocarpus*, *Decalepis*.

INTRODUCTION:

Recently there is a revival of interest in the traditional system of medicine. The ethno-medico-botanical study can bring out many efficient herbs and there species for the treatment of many common human diseases. The herb *Sariva* is famous in Indian medicinal system. It is used for various health ailments. Two types of *Sariva* are mentioned in ayurveda that are *Shweta* and *Krushna Sariva*.^[1] But by the name *sariva* four species are being used in different regions of India as follows:

1. *Hemidesmus indicus* (L.) R. Br.

Also called as true or *Sweta sariva*

Synonym: *Periploca indica*^[2]

Taxonomy:

Table no. 1 – Scientific classification of *Hemidesmus indicus*^[3]

Kingdom	Plantae
Division	Magnoliophyta
Sub-division	Magnoliophytina
Class	Magnoliopsida
Sub-class	Magnoliidae
Order	Gentianales
Sub-order	Gentianeae
Family	Periplocaceae
Sub-family	Asclepiadiaceae
Genus	<i>Hemidesmus</i>
Species	<i>H. indicus</i>

Vernacular names:^[2]

- Sanskrit: *Dhawala Shariva, Gopa, Gopakanya, Krushodari, Sfota, Shyama, Gopavalli, Lata, Aasfota, Chandana*^[1]
- English: Indian Sarsaparilla
- Hindi: *Salsa*.

- Marathi: *Anantvel, Uplasari, Maeen mool*
- Tamil: *Nannari*.
- Gujarathi: *Anantmul*.
- Kannada: *Anamtamul*.
- Assam: *Anantmul*
- Bengali: *Anantmul*
- Malayalam: *Nannaari*
- Oriya: *Suguddimalo*
- Persian: *Ushba*
- Urdu: *Salsa*
- Telugu: *Sugandhi*

Distribution:

Local: Upto an elevation of 1000m, deciduous brush and forests of dry and arid regions

Global: South Asia region, in India from the upper Gangetic plain eastwards to Assam and in some places in central, western and South India.^[4]

Morphology:

Form: Perennial, slender, laticiferous, twining/prostrate, wiry, semi-erect shrub.

Leaves: Simple, entire, opposite, short petioled, very variable from elliptic-oblong to linear-lanceolate, polymorphous, variegated with white above and silvery white and pubescent beneath. Leaves in the basal portion of the plant are linear and dark bluish green with a white streak along the midrib. At upper branches shorter and broader without any variegation along the midrib.

Stem: Numerous, slender, terete, thickened at nodes.

Flowers: crowded in sub-sessile axillary fascicle, greenish yellow to greenish purple outside, dull yellow to light purplish inside.



Fruit: A narrowly cylindrical widely divergent follicle 10-20cm long and 0.5-0.6cm thick.

Seeds: Many, flat, oblong having white silky coma.

Roots: Woody and aromatic, very long, attain a length of 3.5m or more, hence the term 'Ananthamoola' and 0.5-1cm thickness. Most often uniformly cylindrical though irregularly bent, curved/slightly twisted and woody, rigid.

Flesh roots: brownish/purplish brown colour masked with irregular patches of dull green with a diameter of 0.5-1.5cm, brownish /purple in colour and aromatic odour. Very strong lateral roots and rootlets are prominent. Vanillin like Odour, sweet in taste, surface of older roots are transversely cracked and longitudinally fissured.

Root bark: Easily separable from inner core, this is the aromatic part. Surface smooth in young roots but thicker in older roots, appears rough due to formation of lenticels.^[4]



Image no. 1 *Hemidesmus indicus*^[5]

Phytochemistry:

Root: Volatile matter 0.03-0.54%^[6], 2-hydroxy-4-methoxybenzaldehyde, an isomer of Vanillin^[7] lupeol^[6, 8] majorly, hexatriacontane, lupeol, alpha amyryn, beta

amyryn, a new coumarini-lignoid-hemidesminine, six pentacyclic triterpenes.^[9, 10]

Stem: Calogenin acetylcalogenin, lupanone, hexadecanoic acid.^[9, 10]

Leaves: Tannins, flavonoids, hyperoside, rutin, coumarino and leucoderma lignoids.^[9, 10]

Traditional usage:^[1]

It's used in loss of appetite, indigestion, Asthma, Cough, Skin diseases, fever, Diarrhea etc.

Previous work-done:

1. In-vitro anti-microbial activity of *Hemidesmus indicus* evaluated against pathogenic bacteria *Staphylococcus aureus*, *Pseudomonas aeruginosu* and *Klibsiella pneumonia* in the.^[11]
2. Alam and others explored the possible venom neutralizing effect of a pure compound (2-hydroxy-4-methoxybenzoic acid) isolated and purified from the methanoilic root extract of *Hemidesmus indicus*. It possesses potent anti-inflammatory, anti-pyretic and anti-oxidant properties in male albino mice and rats.^[12]
3. Ethanol extract of *H. indicus* root significantly prevented rifampicin and ionized induced hepatotoxicity in rats.^[13]
4. Ethanolic extract was reported for an effective chemo-protective agent and prevented oxidative stress and tumours in skin.^[13]
5. Aqueous Ethanolic extract of root collected during flowering season was found to possess significant antiulcer activity. Lupeol acetate isolated and purified from the Methanoilic extract of *H. indicus* roots proved to posses

the ability to neutralized viper and cobra venom. Lupeol acetate could significantly neutralized lethality, haemorrhage and defibrinogenation caused by viper and cobra venom in patients.^[15]

2. *Ichnocarpus frutescens* R. Br.

Synonym: *Apocynum frutescens*, *Echites frutescens*, *Quirivelia frutescens*^[16]

Taxonomy:

Table no. 2 – Scientific classification of *Ichnocarpus frutescens*^[3]

Kingdom	Plantae
Division	Magnoliophyta
Sub-division	Magnoliophytina
Class	Magnoliopsida
Sub-class	Magnoliodes
Order	Gentianales
Sub-order	Gentianeae
Family	Apocynaceae
Genus	<i>Ichnocarpus</i>
Species	<i>I. frutescens</i>

Vernacular names:

Sanskrit: *Sariva*, *Krishna-Sariva*, *Krishnavalli*, *Sariba*, *Gopvadh*, *Gopi*, *Shyama*^[1]

English: Black creeper

Hindi: *Kaiser*, *Kali-anantamul*, *Dudhalata*

Marathi: *Shyamalata*

Tamil: *Jdaragod*.

Kannada: *Kariumbu*

Assam: *Dudhkuri lota*

Bengali: *Krusihna*.

Malayalam: *Nannari*.

Oriya: *Bhotinoi*

Telugu: *Naltig*^[16]

Distribution:

Local: Secondary scrub land in the low land area, elevation - 1000m.

Global: Through Western Himalayas to Sri Lanka and South-East Asia to Australia^[4]

Morphology:

Form: A large, evergreen, laticiferous, woody creeper with rusty red appearance.

Leaves: Opposite, elliptic-oblong to broadly lanceolate. Length 2.5-10 to 1.5cm.

Young leaves: coriaceous, pubescent.

Flowers: Fragrant, greenish white/purplish.

Inflorescence: Axillary/terminal panicle of cymose clusters.

Fruit: a follicle, cylindrical, usually two, divaricately placed.

Seeds: black, 1.5-2cm long.

Dried roots: irregularly curved pieces of rusty or purplish brown colour.

Fresh roots: somewhat turgid, when scratched or incised.

Latex: creamy white or light yellowish.^[4]



Image no. 2 *Ichnocarpus frutescens*^[17]

Phytochemistry:

Evidence available is inadequate.^[3]

Traditional usage:

- Used for rheumatism, asthma, cholera, and fever^[18]

2. Root powder - with milk used as blood purifier^[18,19], in diarrhoea by the tribals of Madhya-Pradesh and Rajasthan^[20], in diabetes and bladder stones,
3. Inflammatory diseases, headache and snake bite^[21]

Previous work-done:

1. Rakesh and others reported the presence of anti-diabetic properties in aqueous root extract of *I. frutescens* administered to streptozotocin induced diabetic rats.^[22]
2. Pandurangan and others concluded the existence of strong anti-inflammatory and anti-oxidant and free radical scavenging properties, anti-tumor activity, and anti-pyretic effects in methanol extract of roots of *I. frutescens*.^[23]

3. *Decalepis hamiltonii* Wight & Arn.

Synonym: *Apocynum reticulatum* Herb. Madras ex Wall^[24]

Its root is better known as *Nannari* in Rayalseema and *Sugandhi* in Coastal Andhra. According to AP state Biodiversity Board these roots are being smuggled outside the country like in Australia, South Africa and others.

Taxonomy:

Table no. 3 – Scientific classification of *Decalepis hamiltonii*^[25]

Kingdom	Plantae
Division	Angiosperms
Sub-division	Eudicots
Order	Gentianales
Sub-order	Gentianeae
Family	Apocynaceae
Subfamily	Periplocoideae
Genus	<i>Decalepis</i>
Species	<i>D. hamiltonii</i>

Vernacular names:^[24]

- Sanskrit: *Sariva, Svewtasariva*
- English: Swallow root
- Tamil: *Magali kizhangu*.
- Kannada: *Makali beru*.
- Malayalam: *Mahannikizhangu*.
- Telugu: *Maredu Kommul*.

Distribution:

Global: Endemic and Endangered to Peninsular India and eastern Ghats of Andhra, Karnataka, Tamilnadu and Kerala.^[3]

Local: dry and moist deciduous forests, most rocky habitat, crevices of big stones, terrestrial area, places of thick vegetation.^[26]

Morphology:^[27]

Morphologically and chemically the plant resembles African liana called *Mondi* white Skeels. Both have similar ethnobotanical uses and phytochemicals.^[26]

Form: climbing shrub, with branchlets jointed.

Latex: Milky

Root: 5-10cm diameter and 4-10 roots arise from the root stock. A 2 year old plant produce 15-20kg of roots and 1 year old plant produces 1-2kg of roots. These are little bitter and then sweet. Vanillin like smell, the substance that is in vanilla planifolia Andr., an orchid used in ice-creams, chocolates, drinks etc. Although vanillin has been synthesized since 1874 natural sources of this flavoring are still in demand and the roots of *Decalepis* can be used as substitute for vanillin.^[26]

Leaves: Upto 6×4cm, obovate-elliptic or circular, tip blunt, base wedge shaped, membranous.

Flower: Born in cymes trichotomously branched



Fruit: a follicle, cylindrical, oblong, in pairs, woody when dry.

Seeds: Many, egg shaped with long white silky hairs.

Flowering: February-April

Fruiting: May-August



Image no. 3 *Decalepis hamiltonii* Wight & Arn. [28]

Phytochemistry:

2-hydroxy-4-methoxybenzaldehyde an isomer of vanillin. [29]

Essential oil: 2-hydroxybenzaldehyde, o-methylresorcyalaaldehyde, benzyl alcohol and alpha altantone.

Traditional uses:

1. Roots are used to prepare refreshing drinks by Yanadi tribe of Andhra locally called as “Nannari Sharbat, sugandhapala or sarasaparilla”. [26]. It cools the system, contains many calories, purifies blood, and increases appetite, boosts immunity. Also called poor man’s drink of the state. [26]
2. Cures indigestion, deficient digestive power and chronic rheumatism, relieves flatulence.
3. Prevents cancers of various types. [25]
4. Chutney and pickle using lemon juice are prepared from roots by rural people in

southern India and its taste like ginger pickle and Consumed by Yanadis along with food for indigestion, constipation and flatulence. [26]

Previous work-done:

1. Anti-coagulant activity [30]
2. Essential oil from swallow-root exhibited for anti-microbial activity against *Bacillus cereus*, *Bacillus megaterium*, *Candida albicans*, *Escherichia coli*, *Micrococcus luteus*, *Micrococcus roseus* and *Staphylococcus aureus*. So may be considered as inexpensive source against food borne pathogens. [31]
3. Found to be good against bacterial infection including *Salmonella typhi* that causes typhoid and *Helicobacter pylori* that causes ulcers in the stomach and even cancers. [32]
4. Anti-diabetic property was found in rats. It’s protects the liver and prevents formation of cholesterol deposits in the blood vessels. [32]
5. Root extracts showed high anti-oxidant activity measured as scavenging of DPPH, superoxide and hydroxyl radicals. Both the aqueous and Ethanolic extracts inhibited microsomal lipid peroxidation and exhibited strong reducing power and metal chelating activity. The roots of *Decalepis hamiltonii* could serve as a new source of natural anti-oxidant or nutraceuticals with potential applications to reduce the level of oxidative stress. [33]

4. *Cryptolepis buchananii* Roem. & Schult.

Synonyms: *Cryptolepis dubia/reticulate*, *Periploca dubia* [34]

Taxonomy:



Table no. 1 – Scientific classification of *Cryptolepis buchananii*^[3]

Kingdom	Plantae
Division	Magnoliophyta
Sub-division	Magnoliophytina
Class	Magnoliopsida
Sub-class	Magnolioidae
Order	Gentianales
Sub-order	Gentianineae
Family	Periplocaceae
Sub-family	Asclepiadiaceae
Genus	<i>Cryptolepis</i>
Species	<i>C. buchananii</i>

Vernacular names: ^[34]

- Sanskrit: *Jumbupatra-sariva*
- English: Wax leaved climber
- Hindi: *Karanta, kala-bel*
- Marathi: *Dudhi-vel, Kavali*
- Tamil: *Pala koti*
- Assamese: *Harjora-lata, Krishna-anantmula*
- Malayalam: *Katupaalvalli*
- Telugu: *adavipalatiga*
- Kanada: *Medhaguli hambu*
- Oriya: *Maloti*
- Nepali: *Dudhe,*
- Bengali: *Kalasariba*
- Tribal: *Dudlat*

Distribution ^[3] –

Global: North Pakistan, Nepal and Bhutan through India to Srilanka, Assam, Arunachal Pradesh, Northeast Nagaland, Kashmir in Northern and Travancore in Southern India besides Myanmar, China.

Local: Tropical and sub-tropical region, deciduous scrub and forests of dry and

intermediate zone, upto an elevation of 1000m.

Morphology: ^[3]

Form: Glabrous woody, large, evergreen twinner

Leaf: Opposite-decussate, simple, rounded/short cuneate of the base, suddenly narrowed into a short mucronate apex, shining above. Dried leaf with the mid rib proximally impressed, distally almost flat on the upper side, faintly raised above; lateral veins slightly rise on both surfaces and plain beneath.

Stem: 30cm diameter

Bark: smooth, copper-colored, peeling off in papery rolls in old stem.

Flowers: pale yellow in lax dichotomous cymes

Inflorescence: Shorter than leaves, peduncle equaling or exceeding the petiole.

Fruit: A stout, paired follicle, pointed above, inflated at base,

Seeds: Compressed, oblong-ovate, obovoid and flat with silky coma, white silky hairs.

Latex: white

Roots: length varies, 1-1.5cm thick, slender, cylindrical and dark brown or blackish exterior. Surface is very rough and fine, ridges and wrinkles present longitudinally. Older roots show few transverse cracks, fissures with remnants rootlets and a few lenticels.

Flowering: May-July

Fruiting: September-November





**Image no. 4 *Cryptolepis buchananii*
Roem. & Schult.^[5]**

Phytochemistry:

Leaves and roots:

- 1) Glycosides: sarverogenin, isosarverogenin^[35]
- 2) Cardenolides: Cryptosin^[36]
- 3) Buchanin^[37]
- 4) Pyridine alkaloid Buchananine^[38]
- 5) Serine protease Cryptolepain.^[39]

Traditional usage:

1. Leaves: tonic, Root barks: used in rheumatism, internally in abdominal pain.
2. Root: demulcent, tonic, appetiser and useful in fever, skin diseases and leprosy.
3. Roots, stems and leaves: in bone fracture by tribal people in India, sores, body ache and snake-bite.
4. Anti-diarrheal, anti-bacterial, anti-ulcerative, anti-inflammatory, blood purifier and for lactation in women.^[40]
5. Demulcent, diaphoretic, diuretic, cures paralysis^[41] and rickets^[42]

Previous work-done:

1. Ethanolic extract of root and stem show hypotensive, central nervous system

depressant and anti-amphetaminic activity^[43,44]

2. Paste of *Cryptolepis buchananii* mixed with 5 ml mustard oil showed the effect in external fracture after local application and effective in internal fracture after oral administration with milk.^[45]
3. *Cryptolepis buchananii* extract significantly reduced the acetic acid-induced writhing response in mice, inhibited the oedema formation in both Ethyl Phenylpropiolate induced rat ear edema and carrageenan-induced rat paw edema. CBE significantly reduced the Sulfated glycosaminoglycan and Hyaluronan released from cartilage explants into the culture media while reserved the cartilage matrix molecules such as uronic acid and collagen. It also suppressed the Matrix Metalloproteinase-2 activity with no effect on cell viability. CBE therefore exhibits promising analgesic, anti-inflammatory and chondro-protective effects and useful in Osteoarthritis.^[46]
4. Oral administration of Ethanol extract of *Cryptolepis buchananii* root showed significant stimulation of the delayed type hypersensitivity reaction and humoral antibody production in mice and rats.^[47]

AIM:

To study the different species of *Sariva* used in various regions of India and that are *Hemidesmus indicus*, *Ichnocarpus frutescens*, *Decalepis hamiltoni* and *Cryptolepis buchananii*.

OBJECTIVES:

Primary objective:

To study true *sariva* and its different species used as *sariva* in various regions of India



Secondary objective:

To study the pharmacognosy of true *sariva* and its different species.

OBSERVATIONS:

In many regions of India *Hemidesmus indicus* is used as true *sariva* or *Shweta sariva*. In *Ayurveda* two types of *Sariva* are mentioned that are *Shweta* and *Krushna Sariva*.^[1] *Cryptolepis buchananii* and *Ichnocarpus* both are taken as *Krushna sariva*. *Cryptolepis* is specifically useful in fracture and has Indian origin. In nature both *Krishna* and *Shweta Sariva* prefer same habitat and possessing same properties. Roots of all the three species are used in *Ayurveda* as an official substitute or adulterant instead of true *Sariva*.^[48] Also *Decalepis hamiltoni* is used as true *sariva* in Southern part of India. But sudden demand for drink of *Decalepis* has pushed the plant into the red list by International Union for Conservation of Nature. *Decalepis* has some side effects. It might slow blood clotting, so there may be chances of extra bleeding during and after surgery. Therefore, it can't be used, at least 2 weeks before a scheduled surgery. Medications that slow blood clotting interact with Swallow-root and might increase the chances of bruising and bleeding.^[32] *Sariva* is commercially available tonic herb which can be adulterated due to its more use.

RESULTS:

Hemidesmus indicus can be used as true or *Shweta sariva* and other species are called for its possible substitutes. This review article has mentioned the brief pharmacognosy of *sariva* collected from various research works related to the species of *sariva*. Morphologically all four

root parts are distinct in their appearance and *H. indicus* can be easily identified and differentiated from other root parts. Some common conspicuous characters explored for *H. indicus* root are small wood part, purplish color of the cut surface, wrinkled and easily peel able outer surface. These Features provide a fast tool of raw material identification

DISCUSSION:

Four plant species known as *sariva* are pharmacognostically evaluated in the present study. Macroscopic characters enable to differentiate *H. indicus* from its adulterants or substitutes. This study provides a means of identification of market sample of true *sariva*. *Hemidesmus indicus* and *Cryptolepis buchananii* belong to family Periplocaceae and *Decalepis* and *Ichnocarpus* belong to family Apocynaceae. All are possessing nearly similar properties and action. Now a day's few of them are commercially cultivated in various regions of India. The property of True *sariva* mentioned in Ayurvedic literature is *Madhura-Tikta Rasa* (sweet and astringent taste), *Snigdha*, *Guru Guna* (oily property), *Sheeta virya* (coolant in nature), *Madhura Vipaka*, *Raktaprasadan Prabhava* (Blood purifier) and *Brihana*, *Balya Karma*. It has been included in the *Stanyashdhana* (purifies lactation), *Purishasanghrahaniya* (Anti-diarrheal), *Jwarahar* (anti-pyretic), *Dahaprashamana* (relieves burning sensation) *gana* and *Madhurskandha* (Sweet in taste) of *Aacharya Charaka* as well as included in *Sarivadi*, *Vidarigandhadi* and *Vallipanchamula gana* of *Aacharya Sushruta*.^[49] It was used as a healing herb as well as a magical-spiritual dream herb. In this way, present article is an attempt to review the



morphological features of the plant taken as Sariva along with the review of literature regarding the therapeutic values described.

CONCLUSION:

From above study, conclusion is that *Hemidesmus indicus* can be used as true sariva or *Shweta sariva* as mentioned in *Ayurveda*. Other three species are substituted or adulterated as sariva in different regions. The diagnostic characters mentioned in this article will be useful to screen out original crude drug material at the point purchasing. *Sariva* i.e. Krishna *Sariva* and *shweta Sariva* including its different species, all are having approximately similar properties and uses. Commonly they are used as tonic, appetizer, in skin disorders, as a blood purifier etc.

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