ARGYREIA SPECIOSA (L.F.) SWEET. (VRDHHADARU): PLANT OF INDIAN MEDICAL LEXICONS

Yadav Chhavi¹*, Chaubey Suresh², Singh Tejbeer³

¹P.G. Scholar, ²Professor, P.G. Dept. of Dravyaguna, Rishikul Campus, UAU, Haridwar, Uttarakhand, India.
³Prof & HOD, Gurunanak Ayu. Medical College, Gopalpur, Ludhiana, Punjab, India.

ABSTRACT

Argyreia speciosa Sweet. is a popular Indian medicinal plant, which has long been used in traditional Ayurvedic Indian medicine for various diseases. It is commonly known as Vidhaara or Vrddhadaru. It is a large creeper and is covered with hair all over. Flowers are either pink or red or purple coloured. It is not mentioned in Samhitas, but described in the Nighantu granthas. Vrddhadaru is a controversial drug. It is mainly confused with Ipomaea petaloidea. In Nighantus it is described by name of Vrddhadaru. It is mainly described in Dhanvantri Nighantu, Shodhal Nighantu, Abhidhan Ratnamala, Madanpal Nighantu, Raj Nighantu, Nighantu Adarsh and in Priya Nighantu. The Importance of Plant is well recognized by its presence in almost all Nighantus and by its therapeutic potential. Therapeutically prove action of Argyreia speciosa Sweet. Is in aphrodisiac, immunomodulatory, hepatoprotective, antioxidant, antiinflammatory, antihyperglycemic, antidiarrheal, antimicrobial, antiviral, antiulcer, anticonvulsant, analgesic and central nervous depressant activities. A wide range of phytochemical constituents have been isolated from this plant. Its seeds mainly contain ergine, isoergine which has hallucinogenic properties. It is a comprehensive account of the Taxonomy, Synonyms, Vernacular names, Classical review, Properties, Controversy, Morphology, Microscopy of root, stem & leaf, Chemical constituents & their action, Indication, Part used, Dosage, Therapeutic usage, Formulations & Preparations and recent research findings which shows the importance of plant and help to gain knowledge about the plant.

KEYWORDS: Nighantu, Aphrodisiac, immunomodulatory, phytochemical constituents.

INTRODUCTION

The term herb refers to a plant used for medicinal purpose. Medicinal herbs and plant extracts are now generally considered as effective medicines to be respected, appreciated and they play a major role. World Health Organization estimated that about 80% of the world’s population relies on herbs for their primary healthcare needs.¹ One such plant, Argyreia speciosa Sweet., is a perennial climbing vine native to the Indian subcontinent and introduced to numerous areas worldwide.² It is often prized for its aesthetic value³. A. speciosa seeds contain various ergoline alkaloids such as ergine.⁴ A study reported stereoisomers of ergine to be found in the seeds at a concentration of 0.325% of dry weight.⁵ A. speciosa was not traditionally used for its hallucinogenic properties. Its properties were first brought to attention in the 1960. The seeds contain the highest concentration of psychoactive compounds in the entire family. Extracting ergine from A. speciosa seeds is illegal in the USA, since it is classified as a schedule-3 depressant by the DEA. It is now illegal to supply A. speciosa in the United kingdom due to the passing of the psychoactive substances Act 2016⁶. It has various medicinal properties is widely used in Ayurveda. In this review a comprehensive account of the Classical review from different lexicons and other ayurvedic texts, morphology, phytochemical constituents and pharmacological activities, different research activities are included in a view.

Taxonomy of Argyreia speciosa Sweet⁷,⁸

Table 1: Showing Botanical Classification of Argyreia speciosa

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subkingdom</td>
<td>Tracheobionta</td>
</tr>
<tr>
<td>Super-division</td>
<td>Spermatophyta</td>
</tr>
<tr>
<td>Division</td>
<td>Magnoliophyta</td>
</tr>
<tr>
<td>Class</td>
<td>Magnoliopsida</td>
</tr>
<tr>
<td>Subclass</td>
<td>Asteridae</td>
</tr>
<tr>
<td>Order</td>
<td>Solanales</td>
</tr>
<tr>
<td>Family</td>
<td>Convolulaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Argyreia Lour</td>
</tr>
<tr>
<td>Species</td>
<td>A. speciosa</td>
</tr>
</tbody>
</table>

Binomial name: Argyreia speciosa (L.f.) Sweet.

Synonyms: Argyreia nervosa (Burm. f.) Bojer
Convolvulus nervosus Burm.f.
Convolvulus speciosus L.f.
Santaloides minus
Lettsomia nervosa (Burm.f.) Roxb

Synonyms ⁹-¹⁵
- Vrddhadaru
- Ajandi
Vrddhadaru is not described by the Brhat Trayi but mentioned as Trikona Kanda in Astang Sangraha²⁸. Acharya Caraka quoted ‘Vrddha ruha’ in the context of Sukrajanana dasaimani but, Acharya Cakrapanji confirmed it as Satavari²¹. It is described in lexicons.

- **Dhanvantri Nighantu** has described Vrddhadaru in Karveerangi Varga²².
- In Shodhal nighantu Vrddhadaru is in Karveeradi Varga²³.
- In Abhidhaan Ratnamala or Shadrasa Nighantu Vrddhadaru is mentioned in forth Varga i.e., Tikta sakandha²⁴.
- **Madanpal Nighantu** has described Vrddhadaru in Abhyadi Varga²⁵.
- In Kaidev Nighantu it is mentioned in Aousdhhi Varga²⁶.
- In Bhavprakash Nighantu Vrddhadaru is described in Guduchyadi Varga²⁷.
- Raj Nighantu included Vrddhadaru in Guduchyadi Varga²⁸.
- **Nighantu Adarsh** Described it in its second volume in Vrddhadarvyadi Varga²⁹.
- **Vrddhadaru is in Sharadi Varga of Priya Nighantu³⁰.**

### Classical Review

Vrddhadaru is not described by the Brhat Trayi but mentioned as Trikona Kanda in Astang Sangraha²⁸. Acharya Caraka quoted ‘Vrddha ruha’ in the context of Sukrajanana dasaimani but, Acharya Cakrapanji confirmed it as Satavari²¹. It is described in lexicons.

- **Dhanvantri Nighantu** has described Vrddhadaru in Karveerangi Varga²².
- In Shodhal nighantu Vrddhadaru is in Karveeradi Varga²³.
- In Abhidhaan Ratnamala or Shadrasa Nighantu Vrddhadaru is mentioned in forth Varga i.e., Tikta sakandha²⁴.
- **Madanpal Nighantu** has described Vrddhadaru in Abhyadi Varga²⁵.
- In Kaidev Nighantu it is mentioned in Aousdhhi Varga²⁶.
- In Bhavprakash Nighantu Vrddhadaru is described in Guduchyadi Varga²⁷.
- Raj Nighantu included Vrddhadaru in Guduchyadi Varga²⁸.
- **Nighantu Adarsh** Described it in its second volume in Vrddhadarvyadi Varga²⁹.
- **Vrddhadaru is in Sharadi Varga of Priya Nighantu³⁰.**

### Vernacular names³¹-³⁹

**Table 2: Showing vernacular names of Vidhaara**

<table>
<thead>
<tr>
<th>Sanskrit</th>
<th>Chhagalantri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindi</td>
<td>Bidhara, Ghavpatta</td>
</tr>
<tr>
<td>English</td>
<td>Elephant Creeper</td>
</tr>
<tr>
<td>Telugu</td>
<td>Samudrapala</td>
</tr>
<tr>
<td>Gujarati</td>
<td>Undha Chhati num pana</td>
</tr>
<tr>
<td>Tamil</td>
<td>Samudrapachhe</td>
</tr>
<tr>
<td>Malyalam</td>
<td>Samudrassoak</td>
</tr>
<tr>
<td>Bengali</td>
<td>Vijratadak, Vindhatadak</td>
</tr>
</tbody>
</table>

### Properties³¹,³²

- **Rasa (Taste)** – Katu (Pungent), Tikta (Bitter), Kashaya (Astringent)
- **Guna (Qualities)** – Laghu (Light for digestion), Snigdha (Slimy)
- **Vipaka** – Madhura (Undergoes sweet taste after digestion)
- **Veerya (Potency)** – Ushna (Hot)

### Karma (Actions)

- **Kaphavata shamaka** (reduces vitiated Kapha and Vata dosha).

### Vrddhadaru A Controversial Drug³³

It was identified before as Argyreia speciosa but looking to the description as given by the commentator of Sidhhamantra in Astang Samgraha that:

- Stem should be triangular.
- Flowers should be red or crimson.
- Fruits yellow.
- It must be a gigantic creeper.
- Leaves should be of the shape of betel leaves with milky juice.
- The whole plant should be pubescent.

All this corresponds with Ipomaea petaloidea Chois; A. speciosa has not triangular stems and red flowers etc. Roots, leaves, seeds are used in medicine.

In Kanpur the roots of A. speciosa are sold as black Trivrt (Operculina turpethum).

The seeds of Thespesia populnea (Malvaceae) Parasapipala are sold as the seeds of Vrddhadaru which are considered aphrodisiac.

Adhoguda (Charaka, Sutra) has been identified by Cakrapani as Vrddhadaru, but Guda means Snuh = Euphorbia nerifolia (Euphorbiaceae). Adhoguda is a purgative and it is in the list of mulini i.e. whose roots are to be used as purgative. So Adhoguda is not Vrddhadaru. Antahcotarpushpi is the correct identification of the flowers of convolvulaceae. They are really so i.e. corolla campanulate, purplish white with deep rose coloured. The leaves of Ipomaea petaloidea are cordate, acute, glabrous, above, thickly nerved beneath and silky silvery. The word Argyreia means white or silver like. The upper side of the leaf is used to act as a discutient, the under or white side is maturant. The leaves are very useful to disperse the swellings due to boils. They are also employed in diabetic carbuncle. It prevents old age or kills the old or advancing swellings due to boils. They are also employed in diabetic carbuncle. It prevents old age or kills the old or advancing.

In medicine roots should be used. In Gujarati, Samudrasoash is Argeria speciosa or Petaloidea. But in Hindi, Salvia piebeia (Labiateae) is taken as Samudrasoash.

### Morphology³⁴

**Root**

The roots of Argeria speciosa are varying in size as well as in thickness. The thin roots are usually 2-4 mm in diameter and show somewhat smooth brownish exterior. When cut transversely they show a thin periderm and cambium, appearing as a dark line almost midway between the centre and the outer circumference.
The thick root is 5-25 mm in diameter or even more, have a rough exterior due to the presence of large number of lenticiels. A transversely cut surface of such root shows colorless tertiary phloem and a pink-colored crescent-shaped tertiary xylem.

**Stem**

The stem is white and tomentose in young stages. The older stem (25 mm) is so thick that it shows vertical ridges and numerous lenticiels, which are mostly transversely elongated.

**Leaf**

The lower surface of the leaf is entirely covered with hair, which gives the leaf a silvery soft woolly appearance. The upper surface of the leaf is green, glabrous and shows the markings of nerves by slight depressions. The mature leaf is dorsiventral, unistate, a strong midnerve and several faint lateral nerves, alternate, petiolate, acute at the apex and cordate at the base. The margin is entire but slightly wavy near the base. Lateral nerves 14-20 pairs arise alternatively on the midrib; the single nerves bifurcate before reaching the edge; the anterior branch unites with the posterior one of the neighboring nerve; an arched nervule connecting the two branches reach the margin. Petioles stout and cylindric, a little shorter than the length of the blade are completely covered with woolly tomentum.

**Seeds**

The seeds are more or less triangular, 0.5 to 0.75 cm long up to 5 mm broad having two flat or slightly concave sides, the third side is convex. The hilum is distinct, brown colored, rounded situated in the spherical depression at the broader end. The outer surface is glabrous or at places with whitish patches of pulp. The texture is hard and not easily breakable. The seeds are exalbuminous. The embryo of seed is large having two-folded cotyledons and distinct plume of whitish black to blackish brown color. The odor is not characteristic while it tastes slightly astringent.

**Microscopy**

The young root shows an epidermis composed of small cubical parenchymal cells, followed by a wide cortex consisting of mostly isodiametric or in some cases, slightly oval cells. The primary vascular structure is tetrarch to pentarch. The mature root possesses a narrow periderm of 6-8 layers of cork cells, a single layer of phellogen and 10-12 layers of phellem cells. The phelloderm cells close to the phellogen are somewhat tangentially elongated and thin walled but become gradually polyhedral. Some of them possess rosette crystals of calcium oxalate. The secondary phloem is a wide zone, consisting of sieve tube elements with companion cells and phloem parenchyma. Resin canals, small strands of tertiary xylem and tertiary phloem are found scattered throughout the region. The secondary xylem is composed of large xylem vessels, tracheids, fiber trachedeis and fibers. The vessels are drum-shaped, having bordered pits on the walls. The tracheids are cylindrical and possess bordered pits on the walls. The wood fibers are long and tapering with pointed ends.
tissues are recognized. The trichomes are silvery giving a wooly cover to the dorsal surface of the leaf and the entire petiole. Each trichome has a barrel-shaped basal cells and filamentous apical cell, base of which is invariably swollen. Sometimes the basal cell may be divided into two.

The midrib is seen as a semicircular projection on the abaxial face, and on the adaxial face it is in the form of small hump. A single crescent-shaped bi-collateral vascular trace traverses in the center. The rest of the area is occupied by parenchyma. The tissue details of the vasculature and ground is similar to that of the components in the petiole. Two functional and morphological types of trichomes occur, the short glandular nine-celled peltate and the long aglandular and two-celled. The structure depicted by Singh (1957) as the pore of the latex canal are in fact the peltate glandular trichomes. The microscopic constants viz., the palisade ratio, vein islet number, stomatal number and stomatal index have also been determined.

**Chemical Constituents**

- Seed oil contain oleic acid.
- Quercetin, Kaempferol from leaves.
- Seeds contain eragine, isomerine, peniclavine, epifriedelinol.

**Action**

**Root** - aphrodisiac (considered as a rejuvenator), nerve (used in diseases of nervous system, sexual disorders), diuretic (used in strangury), antirheumatic. Seeds—hypotensive, spasmylocic.

**Leaves** - used externally in skin diseases (ringworm, eczema, boils, swellings); rubefacient, topically stimulant.

The **seeds** contain hallucinogenic ergoline alkaloids, the main ones being ergine and isoergine. EtOH(50%) extract of seeds exhibits hypotensive activity. (Seeds of all species of *Argyreia* contain ergoline alkaloids and are hypotensive.) Leaves of *Argyreia sp.* contain sitosterol and are antiphlogistic.

In Indian medicine, *A. speciosa* is not used as a single drug for sexual disorders in men, but as a supporting drug for exerting its antiphlogistic, spasmylocic and hypotensive actions on the central nervous system. The drug, in itself, did not show anabolicum-androgen-like or spermogenic activity experimentally.

The seeds contain hallucinogens including ergonovine, isoinerine (isolysergic acid amide) and ergine (lysergic acid amide). Four to eight seeds are equivalent to 10-100 mcg of LSD, a potent serotonin1A (5-HT1A) agonist. The effects last 6-8 h.

**Indications**

- *Amavata, Arsas, Sotha, Frameha, Aghnimandy.*
- *Part Used* : Root.
- **Dosage** : Root Powder – 3-5 gm
- **Therapeutic Usage**
  1. **Filaria** - Powder of *Vrdhhadaru* should be taken with sour gruel.

2. **Eye diseases** – Juice of *Vrdhhadaru* mixed with honey should be used as eye drop in case of Ophalmia neonatorum.

3. **As Rasayana**
   - a) Powder of *Vrdhhadaru* root is impregnated with *Satavari* juice seven times and dried. This powder mixed with ghee should be used for a month. It promotes Physical and mental strength.
   - b) *Vrdhhadaru* root powder should be mixed with honey and ghee for a week keeping on diet of milk and rice. It act as Rasayana.

4. **Vatavyadhi**
   - a) One should take castor oil or *Vrdhhadaru* with milk.
   - b) *Vrdhhadaru* taken with wine, sour gruel, cow's urine, water, fatty substances, meat- soup and vegetable soups pacify aggravated *Vata*.

5. **Urustambha** – Powder of *Vrdhhadaru* and *Sunthi* should be taken with hot water. It alleviates Urustambha.

6. **As Aphrodisiac** – Ghee cooked with *Vrdhhadaru* root should be taken with milk. It is an excellent aphrodisiac and should be used by those desiring progeny.

7. **Piles** – It comes in *Nagaradi modaka*.

**Formulation & Preparations**

- *Vrdhhadaru Kusama curna*
- *Vrdhdharauka kalpa*
- *Nagaradi modaka*
- *Banovit*
- *Confido Tablet*

**Research Studies**

**Aphrodisiac activity**

The root, flower and to some extent leaf of the plant showed aphrodisiac activity as evidenced by an increase in mounting behavior of mice. The plant is valuable in development of effective medicine for stimulating male sexual activity with an influence on sex ratio favoring males. A preparation ‘Fortage’ made from *Withania somnifera, Mucuna pruifinis, Argyreia speciosa. leptadenia reticulate and Anacyclus pyretrum* is used for curing common male sexual disorders. A product containing dried roots of *Argyreia speciosa* is effective to treat male impotence and sterility as evidenced by increase in testosterone level in alcohol-exposed rats.  

**Immunomodulatory activity**

A 95% ethanolic extract of dried root of *A. speciosa* was reported to stimulate both cellular and humoral immunity.

**Hepatoprotective and antioxidant activity**

Ethanol extract and ethyl acetate extract (200 mg and 400 mg/kg) of *A. speciosa* root showed hepatoprotective activity against carbon tetrachloride induced hepatotoxicity in rats. They also showed in vivo antioxidant activity against oxidative stress in rats.

**Analgesic and anti-inflammatory activity**

The alcoholic extract of the roots (50, 100 and 200 mg/kg) exhibited statistically significant anti-
inflammatory activity against granuloma formation technique in the albino rats. The extract did not show much activity against formalin-induced arthritis in rats. A 95% ethanolic extract of root (50-200 mg/kg p.o.) was effective against carrageenan-induced paw edema and adjuvant induced arthritis.

**Hypoglycemic activity**

The alcoholic extract of *A. speciosa* (250, 500 and 750 mg/kg, p.o.) showed significant dose-dependent percentage blood glucose level in normal and in alloxan-induced diabetic rats at 8 h. The dried seeds of *A. speciosa* also possess hypoglycemic activity.

**Antidiarrheal activity**

The 50% ethanolic extract of flowers of *A. speciosa* (50, 100 and 150 mg/kg, p.o.) have significant antidiarrheal activity.

**Antimicrobial activity**

The alcoholic extract of the leaves revealed antibacterial activity against *Staphylococcus aureus* but was inactive against *Escherichia coli*. The aqueous extract was inactive against both the bacteria.

**Antiviral activity**

The extract of the plant and fruits had interferon-like antiviral activity against vaccinia virus in CAM (chorioallantoic membranes) cultures, but was devoid of any activity against Ranikhet disease virus.

**Antulcer activity**

A 50% ethanolic extract of the flower of *A. speciosa* (100-200 mg/kg, p.o.) showed ulcer protective effect in ethanol, aspirin, stress and fourth pylorus ligation induced gastric ulceration in rats.

**Anticonvulsant activity**

The hydroalcoholic extract of *A. speciosa* roots (200 and 400 mg/kg, p.o.) significantly delayed the latency to the onset of first clonus as well as onset of death in unprotected mice and exhibited protection of pentyleneetetrazole (80 mg/kg, s.c.) treated mice. Whereas in case of maximal electroshock seizures, hydroalcoholic extract of *Argyreia speciosa* roots (200 and 400 mg/kg, p.o.) significantly reduced the duration of hind limb extension in mice and both the doses were statistically found to be equipotent.

**Central nervous depressant activity**

Central nervous system depressant activity was observed with n-hexane, chloroform, ethyl acetate and the remaining water fractions of hydroalcoholic extract of *A. speciosa* roots (100, 200 and 500 mg/kg, p.o.) as indicated by the results in which they reduced spontaneous motor activity and potentiated pentobarbital induced hypnosis in mice.

**CONCLUSION**

This review reflects the importance of *Argyreia speciosa* Sweet, it has various medicinal properties & is widely used in Ayurveda. It is a plant of Indian Medical Lexicons. Plant has reported to contain many phytoconstituents. Its seeds contain various ergoline alkaloids such as ergine. The seeds contain the highest concentration of psychoactive compounds in the entire family Convolvulaceae. Traditionally, it is mainly used in Amavata, Arsas, Sotha, Premeha, Agnimandya. Therapeutically prove action of *Argyreia speciosa* Sweet in aphrodisiac, immunomodulatory, hepatoprotective, antioxidant, antiinflammatory, antihyperglycemic, anti-diarrheal, antimicrobial, antiviral, antulcer, anti-convulsant, analgesic and central nervous depressant activities. This will also provide valuable information which will help in getting more advanced knowledge about *Vrdhhadaru* & its various uses.

**REFERENCES**

11. Prof. Priya Vrat Sharma, Kaidev Nighantu, Translated by Dr. Guru Prasad Sharma, Chaukhambha Orientalia, Delhi; 637.
18. Prof. Priya Vrat Sharma, Kaidev Nighantu, Translated by Dr. Guru Prasada Sharma, Chaukhambha Orientalia, Delhi; 637.
22. Dhanvantri nighantu Prof. Priya Vrat Sharma, Dhanvantari Nighantu, Translated by Dr. Guru Prasad Sharma, Chaukhambha Orientalia,Varanasi, 2005; 138.
26. Kaidev nighantu Prof. Priya Vrat Sharma, Kaidev Nighantu, Translated by Dr. Guru Prasada Sharma, Chaukhambha Orientalia, Delhi; 637.
34. V.J Galani, B.G Patel, and N.B Patel, Argyreia speciosa (Linn. F) sweet: A comprehensive review, PMC3249918.


Cite this article as:

Source of support: Nil, Conflict of interest: None Declared

*Address for correspondence
Dr Chhavi yadav
P.G. Scholar
PG Dept Of Dravyaguna
Rishikul Campus, UAU, Haridwar.
Ph No. 9717536096
Email: chhaviyadav928@gmail.com