A Review on Clerodendrum Inerme (L) Gaertn. : The Biological Source of Agnimantha

Swathi Basavaraj Hurakadli ,
PG Scholar,
Department of Dravyaguna,
SDM College of Ayurveda, Udupi
Corresponding author

Hebbar Chaithra S.,
Associate Professor,
Department of Dravyaguna,
SDM College of Ayurveda, Udupi

Ravikrishna S.
Associate Professor,
Dept. of Agadatantra,
SDM College of Ayurveda, Udupi

Abstract:

Agnimantha is one of the plants in *Dashamoola* group which is used since *Vedic* period. The plant bears this name because of its fire producing nature by friction thus its twigs were used as igniters. *Clerodendrum inerme* (L) Gaertn., is a hedge plant belonging to Lamiaceae (Verbenaceae) family. Like all other species of Verbenaceae, this plant is characterized as aromatic herbage. In folklore practice it is used as febrifuge. Recommended as a medicine in major kinds of diseases including fever it is also used for ornamental purpose in home gardens. Current paper compiles the data on *C.inerme* (L) Gaertn., and illuminates its relation with *Dashamoola* as a source of *Agnimantha*.

Key words: *Clerodendrum inerme* (L) Gaertn., *Agnimantha, Dashamoola*, Ayurveda

Introduction

The literal meaning of the word *'Agnimantha'* indicates that it is a plant with which fire was ignited in the sacrificial ceremonies by rubbing the sticks or wood together.[1] There is a mention in Ayurvedic literatures about two types of *Agnimantha*. Due to the varied size of the source plants used as *Agnimantha*, literatures called *Nighantu* have identified *Bruhat Agnimantha* (Bigger variety) and *Kshudra Agnimantha* (Smaller variety) in the flora.[2]

Clerodendrum inerme (L) Gaertn., is considered to a source of *Aranika* or *Kshudra Agnimantha.*[3] It is a straggling shrub found throughout India, very common along the sea coast, often cultivated as a hedge plant or as garden plant whose flowering is seen more or less throughout the year**.** It has a wide pharmacological activity matching with qualities of *Agnimantha*, a plant included in *Dashamoola* group, thus being claimed as one of its botanical sources.[4]

Materials and Methods

Source of data: The information was collected from various Ayurvedic classics (*Charaka Samhita, Sushruta Samhita, Ashtanga Samgraha and Ashtanga Hridaya)* and the properties of the drugs were compiled from *Bhavaprakasha nighantu, Rajanighantu, Kaiyadevanighantu* and *Priyanighatu etc.* and for recent updates various publications and journals were referred.

Observation and Results

Agnimantha is denoted by the synonym *Arani*, in the Vedic period.[5] *Agnimantha* and *Tarkari* are used together in the same context [6] also *Tarkari* is used in the place of *Agnimantha* in certain context.[7] Later in the *Nighantu* period, a third variety of *Agnimantha* has been introduced named *Kshudra Agnimantha, wherein*

A. *Tarkari : Clerodendrum phlomidis* L. f.
B. *Nadeyi : Premna integrifolia L.*
C. *Kshudra : Clerodendrum inerme* (L) Gaertn. [3]

Bioenergetics From Ayurvedic Perspective

Bioenergetics of *Agnimantha* mentioned by different authors is listed below [4]

Sl.no	**Bioenergetics**		D.N	Mp. N	R.N	K.N	B.N	N.R	Sd.N	P.N
1	*RASA*	*Katu*	+	-	+	+	+	+	-	-
		Tikta	+	+	+	+	+	+	+	+
		Kashaya	-	+	-	+	+	+	-	+
		Madhura	-	-	-	+	+	+	-	-
2	*GUNA*	*Laghu*	-	+	-	-	-	+	-	-
		Guru	-	-	-	-	-	-	+	-
		Sara	-	-	-	-	-	-	+	-
3	*VEERYA*	*Ushna*	+	+	+	+	+	+	-	+
4	*VIPAKA*	*Katu*	+	+	+	+	+	+	-	+

Doshaghnata: Kapha vatahara
Karma: Jwarahara, Visama Jwarahara, Shwayatuhara, Sheetaprashamana, Amapachana Agnivardana, Anuvasanopaga, Astapanopaga, Shirovirechana, Vatasamshamana, Kasahara Shwasahara and Hikkahara.
Rogagnata : Agnimandya, Ama, Atistoulya Urustamba,, Shirashoola, Gulma, Vidradi, Asmari, Sharkara, Mutragata, Iksumehahara, Vatajashota, Udara, Nasaroga, Mukaroga, Pandu, Vibanda,Arsa,Prameha,Admana,Visha, Pakwashayaruja, Granti, Vatavyadi, Pratishya, Amavata, and Medoroga [4]

Taxonomical Details Of *Clerodendrum Inerme* (L) Gaertn.

Kingdom: Plantae
Division: Spermatophyta
Sub-Division: Angiosperm
Class: Dicotyledonae
Sub-Class: Gematopetalae
Series: Bicarpellatae
Order: Lamiales
Family: Lamiaceae (Verbenaceae)
Genus: Clerodendrum
Species: inerme
Scientific Name: *Clerodendrum inerme* [4]

Habitat:
The plant grows throughout India in tidal forest, wild all over sea coast and planted as garden wedge in Tamil Nadu.[8]

Vernacular Names:
English Name: Garden quinine
Hindi Name: Lanjai, Sang kupi, Binjoam, Chhotiarani
Kannada name: Kundali, Nayitakkali, Naitakkilay
Tamil Name: Anjali, Pinarichanganguppi, Pinasangamkoppi
Telugu Name: Takkolarkamu, Etipisinika, Pishinita, Eruppichha
Malayalam name: Nirnochi, Nirnotijil
Marathi name: Vanajari, Koivel, Lahankharinarval
Gujarati name: Dariajai
Bengali name: Benjuen, Banjai, Batraj, Bonjoi, Ganibhari, Ganiyari, Ganira[9]

Description Of Clerodendrum Inerme:

Clerodendrum inerme (L) Gaertn., is a straggling and much branched shrub. It may grow up to 2-9 m long. Sometimes it grows scandent. It is associated with a foetid smell when crushed. Bark is pale brown coloured and branches are twiggy. Leaves are opposite rarely alternate upto 5*3.8 cm, elliptic or obovate, entire, obtuse or emarginated at apex and glabrous. Petiols are up to 1 cm long. Flowers are axillary pedunculate cymes, usually 3 flowered; calyx is minutely toothed; corolla is white coloured with long and slender tube. Lobes are sub-equal, oblong and obtuse. Fruits are drupes obovoid.[10]

Phytochemistry of Clerodendrum Inerme

Aerial parts of the plant contain clerosterol as major sterol components. Leaves possess clerodanediterpene, clerodermic acid along with known compounds friedelin, salvihenin, acacetin and apigenin. Stem afford two hydroxyl diterpenoidquinones and botulin.[11]

Pharmacological Activities of *Cleroendrum Inerme*

The plant *C. inerme* is proved with anti-microbial activity , anti-nematidalcidal effects ,anti-hepatotoxic activity, inhibition of the development of the mosquito vector for many diseases, anti-inflammatory, analgesic and antipyretic effects. Also exhibits Neural effects, anti-diabetic effect, antioxidant effect, anti-parasitic and insecticidal effects, anti-allergic effect, effect on muscle contraction, protective effects, anticancer effect and diuretic effect.[4,12]

Discussion

Rationality To Use Clerodendrum Inerme As A Source Of Kshudra Agnimantha:

It is observed in folklore survey studies that physician's self experience and local availability of botanical source promotes the acceptance of different available plant species under one classically given basonym. Many times it also is backed with the pharmacological similarlity among the species accepted. Based on the same theory, *Premna obtusifolia* R. Br., *P. latifolia* Roxb., *Clerodendrum phlomidis* Linn. And *C.inerme* (L) Gaertn. belonging to family Lamiaceae (Verbenaceae) with characteristic strong odour can be considered as sources for *Agnimantha* with respect to different aspects of drug assay. Pharmacognostical study reveals common leaf anatomy in all the four source plants. Phytochemical study on extracts from leaves shows existence of sterols, alkaloids, flavones, anthocyanins in the source plants. All the four source plants can be accepted for the drug *Agnimantha*.[4]

Kshudra Agnimantha is termed with names like *Aranika, Raktanga, Manthana, Tapana, Vijaya, Ganikaarika, Laghu Agnimantha, Tejovruksha, Jaya, Gandhapatra, Gandhapushpa, Krushanuga*.[3,13] The term *Gandha patra* referring to the leaf with odour is also applicable to *C. inerme (*L) Gaertn. as it emits a foetid smell when crushed.

Kshudra Agnimantha tastes *Katu* (pungent) and *Tikta* (bitter), is *Guru* (heavy to digest) possesses *Ushna* veerya (hot potency) and alleviates *Vata dosha* (basic element)**,** helps in A*madosha pachana* (digests undigested material), acts as *saraka* (laxative).[3,9] Similarly *Clerodendrum inerme* (L) Gaertn. Leaves are remarkably bitter in taste and the bitter principle was found to be extracted with petroleum ether and then isolated by successive extraction with water alcohol and finally with hot water and has a yellowish glassy mass. Also the both extract of the leaves and bitter principle increased the intestinal movements thus inducing laxative effects.[14]

Shothahara , Sheetaprashamana, Anuvasanopaga activities are in high regards in *Charaka Samhita* and are base for the classical categorization. *Acharya Susruta* and *Acharya Vagbhata* placed

Agnimantha in *Viratavadi*, *Varunadi*, *Vatasamsamana*.[15] *Agnimantha* is indicated in *Panduroga* (anemia), *Kaphaja agnimaandya* (weak digestive power as a result of *Kapha*) and in *Vibandha* (constipation).[16] Also the drug may be prescribed in *Shopha* (oedema), *Adhmana* (abdominal discomfort), *Pratisyaya* (coryza), *Arshas* (piles), *Aamavata* (inflammatory Joints) and *Medhoroga* (diseases related to fat tissue like Obesity).[3,13]

As per the ethno-botanical studies carried out, clinical application of *C.inerme* (L) Gaertn., are almost similar to utility of *Agnimantha* in ancient health care system. Its leaves are used as febrifuge, alternative, controls epilepsy, heals fractures, malaria, oedema, atrophic rhinitis, diabetes mellitus, gastric diseases and rheumatic swellings. Leaf juice is applied in for burning sensations. Oral intake of juice helps in relieving muscular pains and stiffness of legs (in tetanus) thus an anti-inflammatory drug, it is applied externally in case of elephantiasis, also proved antibacterial activity. The dried leaves are used in the form of poultice to resolve buboes.[17] Roots are prescribed in scrofulous and venereal diseases, skin diseases, lumbago, asthma, cough, also used in fever. Root oil is used in case of rheumatism. The methanol extract of roots contains verbascoside which exhibits analgesic and antimicrobial activities. The fruits are used in food poisoning.[5,18]

Though used in landscaping, as a garden hedge plant, *C.inerme* (L) Gaertn., may be accepted as a source of *Kshudra Agnimantha* as it is potential in eradicating many diseases similar to *Agnimantha*.

Conclusion:

It is documented that sources of *Agnimantha* namely *Premna obtusifolia* R. Br syn *P. Serratifolia* roots and *C. phlomides* Linn. roots are included in the list of 70 medicinal plant species of high trade sourced from tropical forests. *P. obtusifolia* also falls under the list in the IUCN red list of threatened species. Here as the documented utility of *C. inerme* (L) Gaertn. is similar to the *Agnimantha* in view of the threat to the sources of the *Agnimantha* and in view to address the problem of non availability of raw materials with special reference to the ingredient of *Dashamoola*, the most demanded formulation of Ayurveda across the globe, the intelligent step would be standardize some new bio sources like *C. inerme* as one of the substitute of *Agnimantha*.

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