



Review Article

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ETHNO MEDICINAL CLAIMS OF *LEONOTIS NEPETIFOLIA* (L.) R. BR: A REVIEW

Reshmi Pushpan*, K Nishteswar, Harshitha Kumari

Department of Dravyaguna (Clinical Pharmacology), Institute of Postgraduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

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*Corresponding author

E-mail: reshmi.pushpan@gmail.com

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ABSTRACT

India has a very rich tradition of indigenous and health care practices. Most of these practices are unique and known to a very few individuals or communities. Such ethno botanical knowledge needs documentation and research validation. There are many strong ethno medicinal claims which later on led to novel drug discovery all over the globe. *Leonotis nepetifolia* (L.) R. Br. belonging to Lamiaceae family, native to Southern India and tropical Africa is used by tribals and folklore traditions in India. This paper is an attempt to collect, review and analyse all ethnomedicinal claims of the plants reported in India.

Keywords: *Leonotis nepetifolia* (L.) R. Br, ethno medicinal, rheumatism, anti-inflammatory

INTRODUCTION

Primary health care needs of the majority of world population are being fulfilled by traditional medicine. The use of medicinal plants is still a living tradition in the hands of traditional healers such as traditional birth attendants, bone setters, herbal healers and wandering monks. The indigenous system of medicine practiced in India is based mainly on the use of plants in addition to that of animal, metallic and mineral substances. Charaka explains that local communities understood and explored nature's gift of medicinal plants necessary for the typical health needs of the people living in that environment¹. Moreover the seers of Ayurveda believed that there is nothing in this universe that is non medicinal, which cannot be made use for many purposes through various modes². This definition rightly suggests that in principle, all plants have a potential medicinal value although "in practice" a plant is referred to as medicinal when it is used by some system as medicine. The Indian system of medicine, both codified and folk varieties, today use around 8000 species of plants³. The maximum species are utilised by the folk traditions followed by Ayurveda. Acharyas of Ayurveda had utilized the knowledge of ethno medicinal practice of village dwellers, nomads, cattle rearers⁴. The information collected from ethnic sources has to be evaluated on the basis of pharmacodynamic principles promulgated by wise scholars of Ayurveda as quoted in Raja Nighantu, a lexicon on Ayurvedic pharmacology⁵. An outstanding example of an ethno medicinal claims which later on led to novel drug discovery all over the globe is Arogyapacha (*Trichopus zeylanicus*) used by the Kani tribes as a anti-fatigue medicine which was scientifically established and handed down to the general practitioners as "Jeevani" commercially marketed by The AryaVaidya Pharmacy, Coimbatore, India.

History and Description of the plant

Leonotis nepetifolia was first described by Linnaeus (in the genus *Phlomis*), based on an illustration and description of plants growing in the Leiden botanic garden thought to have originated in Surinam. In India it was collected on the Coromandel Coast by the Tranquebar Missionaries, and it may have been one of these, J.G. König, who sent it to Sir Joseph Banks, by whom it was introduced to Kew Gardens in 1778. The plant is considered as a weed of waste lands and cultivated areas⁶. The genus *Leonotis* has 12 species widely distributed in Pantropics and is represented by one species, *Leonotis nepetifolia* in India⁷. *Leonotis nepetifolia* (L.) R.Br (Family-Lamiaceae) is a tall annual herb growing in plains, roadsides, waste places near villages and is often cultivated throughout India. The plant is identified by its finely pubescent obtusely quadrangular stems, long internodes and spinous whorls of orange scarlet flowers with densely wooly upper lip^{8,9}. It is native to tropical Africa but it was introduced and naturalized throughout hotter parts of India but it is nowhere common. It is doubtful whether the herb is indigenous to India¹⁰. Two varieties of the species are identified: *L.nepetifolia* var.*nepetifolia* (with long orange hairs on corolla) and *L.nepetifolia* var.*africana*¹¹ (hairs are usually pale yellow coloured). Common names of the plant are Knod grass (Eng), Lion's ear (Eng), Matijer (Guj) Gathivan (Hindi), Dipmal (Marathi), Murandai or Then thumbai (Tamil) and Ranabheri (Telugu)¹². Medicinal uses of the plant are reported in Madagascar, Brazil, Canada, Kenya and many African countries to treat kidney diseases, rheumatism, dysmenorrhoea, bronchial asthma, fever and diarrhea¹³. The drug is reported to have wound healing¹⁴, antibacterial¹⁵, antirheumatic¹⁶, anti-inflammatory¹⁷, analgesic and anti cancer activities¹⁸.

Constituents

Whole plant contains labdane diterpenoid characterised as 8 β ,17:9,13-diepoxyabdane-16,15:19,6 β -dilactone, coumarin characterised as 4,6,7-trimethoxy-5-methylchromen-2-one, nepetaefolinol and leonotinin. Leaves contain labdane diterpene –nepetaefolin, methoxynepetaefolin. Essential oil of leaves contain octane, (z)-beta-ocimene, β -caryophyllene, β -copaene, α -humulene, germacrene, caryophyllene oxide and root contains n-octacosanol, campesterol 4,6,7-trimethoxy-5-methylchromen-2-one and β -d-glucopyranoside¹².

In India, the medicinal uses of the plant are reported for burns, breast swelling, ring worm, scalds, skin afflictions, malaria and rheumatic pain. Roots of *Leonotis nepetifolia* is considered as the botanical source of Granthiparna (an Ayurvedic herb) which is included in the formulations such as Brihat guduchi taila, Himasagar taila, Nakula taila and Mritasanjeevani sura¹⁹. The ethnomedicinal uses of the plant reported in various parts of India is enumerated in Table 1.

Table 1: Ethno medicinal claims of *Leonotis nepetifolia*(L.)R.Br from various parts of India²⁰⁻⁴¹

SN	Part Used	Clinical Indication	Dosage form	Region	Authority
1	Wp, Lf	Paralysis, skin disease Joint pain(rheumatism), Post natal swelling	Plant ash, Plant paste, Leaf paste Leaf steam bath	Odisha	Shobhangini Nayak,2004
2	Wp	Regulates periods, Diarrhoea	Not specified	Islanders of the Indian Ocean	Jain & Srivastava, 2005
3	Wp	Febrifuge	Not specified	AndhraPradesh	SK Basha,2012.
4	Wp	Body swelling	Paste	Maharashtra	Pawar & Patil,2011
5	Wp	Joint pain(rheumatism)	Decoction	AndhraPradesh	Hemadri,2011
6	Fl	Scalds	Not specified	Maharashtra	DA Patil,2012
7	Fl	Scalds and Burns	Not specified	Bihar, Odisha	Upadhyaya,1998., Dash and Mishra,1999
8	In	Burns	Ash or paste	Odisha	CCRAS,1989
9	In	Wound healing	Paste mixed with groundnut oil	Maharashtra, Kerala, Odisha	SD Kuvar <i>et al</i> , 2010, Binu Thomas <i>et al</i> , 2012, B Kumar <i>et al</i> , 2011.
10	Rt, Fl	Breast inflammation, scalds and burns.	Root Paste Flower ash	West Bengal Maharashtra	Abhijit Dey and Jitendra Nath De,2010 Prashant Y Mali,2010
11	Fl	Night blindness	Juice with sugar	Maharashtra	Salave AP <i>et al</i> ,2011.
12	In	Post natal breast pain	Ash mixed with mustard oil	Andhra Pradesh	N Chandra Babu <i>et al</i> .2012.
13	In	Cough	Paste fried in ghee	Uttar Pradesh	Abhay K. Pandey and N.N. Tripathi <i>et al</i> . 2010
14	Fl and Sd	Cuts,wounds and burns	Not specified	Uttar Pradesh	Abhay K. Pandey and N.N. Tripathi <i>et al</i> . 2010
15	Lf	Eczema	Paste	Tamil Nadu	M Anbarashan <i>et al</i> ,2011
16	Lf	Malaria	Juice	Odisha	Sanjeet Kumar and Dhanalaxmi Dash,2012
17	Lf	Depurative & Febrifuge	Not specified	Islanders of the Indian Ocean	Jain & Srivastava, 2005
18	Lf	Antihelminthic	Infusion	Islanders of the Indian Ocean	Jain & Srivastava, 2005
19	Lf	Burning sensation of Scorpion sting	Paste	Andhra Pradesh	Hemadri,2011
20	St, Lf, Fl	Jaundice	Decoction	Islanders of the Indian Ocean	Jain & Srivastava, 2005
21	Rt	Pre natal vomiting	Not specified	Andhra Pradesh	T.Srinivas,2009
22	Sd	Head sore	Paste	Karnataka	Prashant Kumar and Vidyasagar,2008
23	Sd	Burns	Not specified	Arunachal Pradesh	ChandraPrakash Kala, 2005

Fl:Flower; Fr:Fruit; In-Inflorescence; Lf:Leaf; Rt:Root; Sd:Seed; St:Stem; Wp:Whole plant

The whole plant ash of *L. nepetifolia* is used externally to treat paralysis. The seed, flower and inflorescence (ash and paste) are used as external application for burns. The application of paste of inflorescence mixed with groundnut oil is used for wound healing. Similarly the paste of the leaf is reported to be applied externally in eczema. The ash of the whole plant mixed with mustard oil on external application relieves breast pain during post natal period and also pain due to swelling anywhere in the body including joint pain. Crushed leaves of the plant are rubbed gently on the affected part to alleviate burning sensation due to scorpion sting.

Decoction made from 20 g of the whole plant in 50 ml of water and given once a day for 3 days relieves joint pain. Decoction of the stem, leaf and flowers is administered for jaundice. Whole plant is prescribed for regulating the

menstrual cycle as well as diarrhea. The paste of the inflorescence fried in ghee is administered for treating cough. Internally the juice of the flower mixed with sugar is given for night blindness. Gonds (an ethnic community) of Andhra Pradesh use the roots to treat vomiting in pregnant women.

CONCLUSION

Most of the ethno medicinal claims are centered on flower and inflorescence of the plant. The whole plant and leaves are also administered in a few specific clinical conditions. The analysis of all the claims clearly indicates the potential of the plant to be an excellent analgesic, anti pyretic and anti inflammatory drug which needs to be validated through thorough preclinical and safety and efficacy trials.

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