



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 3, March 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com



Phytochemical and Pharmacological Investigation of *Leonotis Nepetifolia* (Linn.) R. Br. Flowers and Roots Extracts

Mohd Sohrab Khan

PhD Student, Department of Physical Science, Dr. A. P. J. Abdul Kalam University, Indore, India

Abstract: From ancient time India is rich with the traditional knowledge of medicines which is available in Indian forests and other places. Traditional Medicine plays a crucial role in health-care and serves the health needs of a vast majority of people in developing countries. *Leonotis nepetifolia* Family (Lamiaceae) also known as 'Klip dagga' which has long been used in the world as a traditional medicine. A huge number of phytoconstituents have been reported from the plant are allenic acid, iridoids, glycosides, alkaloids, tanins, terpenoids, and many more.

This plant is also being used for biological activities and variety of physiological effects like antifungal, antidiabetic, anxiolytic, arthritic, inflammatory anti diarrhea and many more activities. This literature review presents important species covering phytochemistry and pharmacological activities aspects systematically.

KEYWORDS: *Leonotis nepetifolia*, pharmacological activity, phytochemistry, chemical composition.

I. INTRODUCTION

Medicinal plants are considered as a rich resource of ingredients which can be used in drug development either pharmacopoeia, non-pharmacopoeial or synthetic drugs. Plants and herbal extracts are well known for their ability to have therapeutic potential and have been exploited worldwide to cure many severe ailments.

They are the basis of Ayurvedic medicine, Unani form of medication and Siddha. From time immemorial, lot of work has been done in this field and still more and more efforts are required to exploit these precious resources for the benefit of human kind.

The recorded use of plants in the treatment of ailments dates back to antiquity. Plants are recognized for their ability to produce a wealth of secondary metabolites and mankind has used many species for centuries to treat a variety of diseases. Secondary metabolites are biosynthesized in plants for different purposes including growth regulation, inter and intra-specific interactions and protection against predators and infections.

Many of these natural products have been shown to present interesting biological and pharmacological activities and are used as chemotherapeutic agents or serve as the starting point in the development of modern medicines.¹

Plants have provided a source of inspiration for novel drug compounds, as plant-derived medicines have made large contributions to human health and well-being. Their role is two-fold in the development of new drugs: (a) they may become the base for the development of a medicine, a natural blueprint for the development of new drugs, or; (b) a phytomedicine to be used for the treatment of disease.^{2,3}

Leonotisnepetifolia 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 areas.⁴ The genus *Leonotis* has 12 species widely distributed in Pantropics and is represented by one species, *Leonotisnepetifolia* in India.⁵

II. PLANT DESCRIPTION

Leonotisnepetifolia (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.⁶ *Leonotisnepetifolia*

is also known as Klip dagga, Christmas candlestick, or lion’s ear, is a species of plant in the genus Leonotis and the family Lamiaceae (mint).

Botanical classification of Leonotisnepetifolia

Kingdom	Plantae
Division	Angiosperms
Class	Eudicots
Subclass	Asterids
Order	Lamiales
Family	Lamiaceae
Genus	Leonotis
Species	nepetifolia



Fig: - Whole plant of Leonotisnepetifolia

Geographic Distribution and Habitat –

Leonotisnepetifolia is a plant native to tropical and subtropical East Africa and is widely distributed in the tropics in Africa, Southeast Asia, Pacific Islands, Australia, Central and South America, Southern United States, Mexico and Caribbean islands.

This plant is present all over the world following the European colonial expansion starting from 17th century. Its natural habitat is that of mixed woods, along the banks of streams and along the roads but it grows in areas where it has been introduced along the roadsides, in over-exploited pastures, in disturbed sites, in uncultivated areas, in waterways and in the floodplains. It is also found in savanna vegetation near streams in Western Australia. It grows up to 2,000 meters of altitude. Leonotisnepetifolia is a perennial and annual herbaceous plant that can reach 3 meters in height.

The stem is branched only at the upper nodes and the plant has an easily extirpable taproot about 10cm long. The stems are relatively robust, sparsely branched and sparsely covered with small whitish hairs. These stems are four-angled (i.e. quadrangular) and usually have a distinct groove that runs longitudinally along the center of each side. The leaves, 4.5-20 cm long and 2-15 cm broad, are arranged opposite along the stems and carried on 2-10 mm long petioles. The lower leaves, which are somewhat egg-shaped in outline (i.e. oblong-ovate or ovate), are larger and wider



than those towards the top of the plant. All the leaves have sharply toothed (i.e. crenate or serrated) margins, pointed tips and are sparsely hairy. The flowers are carried in dense rounded clusters of 5-6 cm in diameter, towards the tops of the stems (usually 2-4 clusters per stem). Each of these clusters is placed directly on the main stem, just above a pair of leaves (ie sessile axillary clusters).

The single flowers (20-40 mm long) are orange or reddish-orange in color and tubular in shape with two main lobes (ie they are two-lipped). The lower of these lobes is further divided near its tip, while the upper lobe is somewhat arched or curved and densely hairy.

These flowers are surrounded by a 12-15mm long green tube and each flower also has two elongated, pointed green bracts associated with it. Flowering occurs mainly from summer until early winter). The flower clusters form fruit in the form of hard and somewhat pointed balls when ripe, and consist mainly of the persistent tubes of the calyx (which in fruits widen up to 15-25mm in length). Each individual fruit is a four-lobed "capsule" (schizocarp) which separates into four "seeds" when ripe. These "seeds" are dark brown or dull black, and slightly ovoid or triangular in shape (2.5-4.3 mm in length and 1-1.9 mm in width).

III. PHYTOCHEMICAL STUDIES

Physicochemical screening of nepetifolia revealed that it possesses good physicochemical parameters such as total ash, acid insoluble ash, water-soluble ash, loss on drying, swelling index, and foaming index. The extractive values such as alcohol soluble extract, water-soluble extract, petroleum ether, benzene, chloroform, ethyl acetate, methanol, and aqueous extract are also determined.

Pharmacological screening:

Antimicrobial activity

Disc diffusion method will be performed for the screening of antimicrobial property of plant part against four different microorganisms. Disc of whatsmann filter paper of one quarter inch in diameter will prepared and the same was sterilized using autoclave.

Anthelmintic activity

For the preliminary anthelmintic study, adult earthworms (*Pheretima posthuma*) will be collected from moist soil and washed with normal saline to remove all fecal material. The earthworms of 3 - 5 cm in length and 0.1 - 0.2 cm in width will be used for all experimental protocols due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings.

IV. CONCLUSION

The present review describes the significance of Leonotis nepetifolia as an important medicinal plant. Leonotis nepetifolia stem possesses some biologically active constituents exhibiting diverse biological activities. Since the number of phytochemical constituents identified from the Leonotis nepetifolia is limited it would be a rich opportunity to isolate more bioactive chemical constituents.

REFERENCES

1. Abubakar, M.G., Yerima, M.B., Zahriya, A.G. and Ukwuani, A.N., "Acute toxicity and antifungal studies of ethanolic leaves, stem and pulp extract of Tamarindus indica" Research Journal of Pharmaceutical, Biological and Chemical Sciences Vol. 1, Issue 4, Page. 104- 111, 2010.
2. Iwu, M.M., Duncan, A.R. and Okunji, C.O., "New Antimicrobials of Plant Origin. In: Janick, J. Perspectives On New Crops And New Uses" VA: ASHS Press, 2nd Edition 457-462, 1999.
3. Ciocan, I.D. and Bara, I.I., "Plant products as antimicrobial agents" Analele Stiintifice Ale Universitatii, Alexandru Ioan Cuza, Sectiunea Genetica Si Biologie Moleculara, TOM VIII, Vol. 8, Issue 1, Page. 151-156, 2007.
4. (Hugh Cleghorn. The Forests and Gardens of South India. London: W H Allen and Co; 1861. Available from; [http:// www.archive.org/ details/cu31924003683673](http://www.archive.org/details/cu31924003683673))
5. Venkat RM, Prasanna PV, Venu P, Bhattacharjee A. Some critical Notes on Leonotis nepetifolia (L.) R.Br. var. africana (P. Beauv) J.K. Morton (Lamiaceae). Taiwan, 2011; 56 (3): 254-256
6. JS Gamble. Flora of the Presidency of Madras, Vol-2, Dehradun. Bishen Singh Mahendra Pal Singh Publishers; 2011.p 1155 9. Theodore Cooke. Flora of the Presidency of Bombay, Vol-2, London. Taylor and Francis Publishers; 1908.p 471).



7. (Vasuki K, Kokila Priya S, et al. Pharmacological Properties of Leonotisnepetifolia (L) R.Br- A Short Review. An international Journal of research in Ayush and Allied Systems. 2015;2(3):162-166)
8. (Italiano) Leonotisnepetifolia: Sistematica, Etimologia, Habitat, Coltivazione ... (antropocene.it)



**Impact Factor:
7.569**



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details