

Studies on Ethnomedicinal Properties and Ecological Aspects of *Leucas Aspera* Linn Plant

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ABSTRACT

This study indicates that *Leucas aspera* extracts have good antidiabetic activity. Ethanol and Petroleum ether extracts of *Leucas aspera* exhibited significant anti-hyperglycemic activities. The current piece of work is a focus on micro level study and is purely based on contents in leaf of *L. aspera* in Nagpur region which is used in medicine as well as cosmetics. Basically Aromatic plants of family Lamiaceae that is *L. aspera* have aromatic smell and its aroma which is a characteristic feature of family Lamiaceae. *L. aspera* is commonly known as **Dronapushpi**. In this work I got six compounds in leaves of *L. aspera* which is used as medicine as well as cosmetics industry. These are **9,9 trimethyloctahydrobenzo(d) cycloprop(c) oxepin-2,4-dione, 3-Buten-2-one, 3-methyl-4-(1,3,3-trimethyl-7-Oxabicyclo[4.1.0]heptan-1-yl, Tetratriacontane, Hexacosane, Heptacosane, Tetratetracontane** Also I got 1.33 % gm of aroma oil found in 100 gm leaves of *L. aspera*. *L. aspera* is a wild herb or shrub which is having medicinal value to a great extent and is available abundantly in field of India **Conclusion-** Natural herbs help in preserving and enhancing the beauty and personality of human beings. Natural Cosmetics and personal-care products may contain ingredients whose safety is unknown or which are known to create health risks. The present review focuses on the ethnobotanical potential of herbal extracts for cosmetic purposes. Natural cosmetics general term applied to all preparation and external conditioning and beautifying the body.

Key Words: *Leucas aspera*, Ethnobotany, Cosmetics, antidiabetic activity

I. INTRODUCTION

According to world health organization (WHO) variety of drugs are obtained from ethnomedicinal plants. In developed countries almost 80% of individuals depends on compounds derived from ethnomedicinal plant. In this regard properties, safety & efficiency of them should be investigated¹. Ethnobotany is systematic study of the relationship between plants and people. It is not simply the study of human use of plants rather ethnobotany locates plants within their cultural context in particular societies. The impacts of modern human societies on traditional cultures and natural habitats have caused huge losses of individual species and profoundly disrupted communities of species. The significance of ethnobotany and ethnomedicinal plant is manifold. The study of indigenous food production and local medicinal knowledge may have practical

implication for developing sustainable agriculture and discovery of new medicines. Ethnobotany also encourages an awareness of the link between biodiversity and culture diversity as well as a sophisticated understanding of the mutual influence of plants and human. The Global Strategy for Plant Conservation, a plan to save the world's plant species, grew out of the Convention on Biological Diversity and is being fed into government policy around the world. The GSPC highlights the importance of plants and the ecosystem services they provide for all life on earth, and aims to ensure their conservation. The Global Strategy for Plant Conservation is a catalyst for working together at all levels-local, national, regional and global-to understand, conserve and use sustainably the world's immense wealth of plant diversity whilst promoting awareness and building the necessary capacities for its implementation. Ethnomedicinal plant conservation strategies need to be understood and planned for based on an understanding of indigenous knowledge and practices². Gas chromatography and Mass spectrum is one of the best methods to identify the plant's chemical components. *Leucas aspera* contains essential oil which is a volatile organic strong-smelling substance and has great importance in pharmaceutical industries, food, cosmetics etc.



Fig. *Leucas aspera*

History And Description of *Leucas aspera* (L) Poit.

Lamiaceae family species are important for their medicinal properties among plants. This family is represented by 45 genera and 574 species³. Number of aromatic plants come under this family. *Leucas aspera* (wild) belonging to the family of Lamiaceae is an aromatic herb commonly called "Tamba", found as a weed in Africa, Asia-temperate and Asia – tropical countries. *Leucas aspera* was first described by Linnaeus based on an illustration and description of plants growing in the Leiden botanical garden. *Leucas aspera* (wild) plant contains essential oil which is alkaloids.

Ecological Aspects of *Leucas aspera*

Leucas aspera is commonly found throughout India and the Philippines as well as the plains of Mauritius and Java. In India and the Philippines, it is a very common weed. *Leucas aspera* is typically found in dry, open, sandy soil and is abundant in areas with waste.^[3] Soil type colour of various studied areas found that black soil is common and brown are rare, while pH shows different scales.

II. METHODOLOGY

The present work is based on various site surveys made in Nagpur region(Maharashtra). The plant was collected and its identification was authenticated at research laboratory of Institute of Science, Nagpur. For Ecological parameter used quadrat method for density,frequency, abundance in Studied area of various sites the.It is one the best method for ecological study of plant The information of traditional uses of the plant was gathered from respective site. GC-MS Analysis - The test plant extracts were subjected to GC-MS analysis at laboratory's (IIT Bombay) Sophisticated Analytical Instrument Facility (formerly RSIC), Indian Institute of Technology, Powai, Mumbai – 400076, India.

III. RESULT AND DISCUSSION

The present investigation was carried out on plant *Leucas aspera* of Lamiaceae family to study the presence of medicinally active phytochemicals in the leaves. The chemical composition of the essential compounds from the leaves of *Leucas aspera* (L.) Poit collected from campus and PDKV forest which experienced different climatic and geographic circumstances, were determined by GC-MS. It has been already reported by various workers. As seen in the table- 1, different compounds were determined from the leaves of *Leucas aspera* (L.) Poit. The present investigations concluded that the leaf of *Leucas aspera* contains chemical compounds. These chemicals are widely used in Ayurvedic traditional medicines as well as cosmetics industry..

The pH of soil sample indicates that the ranges are 7.05, 7.62 and 7.49 .PDKV forest soil was slightly alkaline and it indicates neutral nature of the soil. The pH of soil Savner is found to be in the range of 7.62 indicating more than normal nature of the soil. *Leucas aspera* Plant density, frequency, abundance in Studied area showed that .The ecological density, frequency, and abundance of the lucas aspera plant have been reduced to a minimum.

Leucas aspera contain chemical compounds and herbal ingredients,and it has been said that 70-80% of the world's population relies on some form of non-conventional medicine⁴ and around 25-40% of all prescription drugs contain active ingredients derived from plants in theUnited States⁵.

Table No. 1 : Soil Quality Status and pH of the studied sites

S.N.	Parameter	General Percentage	Soil Sampling Location / Concentration		
			PDKV Forest Soil	Savner Soil	Gorewada lake Soil
1.	Soil Color		Black	Black	Brown
2	pH	7.1-7.5	7.6	7.49	7.05

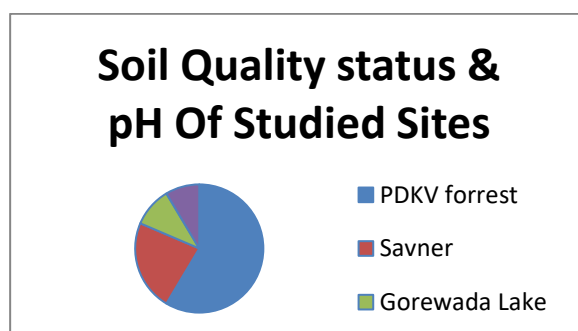


Table No. : 2 Showing *Leucas aspera* Plant Density, Frequency, Abundance in Studied area of various sites the.

S.N.	Name of sites	No. of individuals in diff. Quadrat each of 1 square meter size	Total No. of Individual	Density	Frequency	Abundance
1	Gorewada Lake	× 5 8 × 2 9 × 10 × 3	37	37/10=3.7pt/m ²	----	-----
		- × × - × × - × - ×	-----	-----	60%pt/m ²	
		37 Species occurred	6	-----	-----	6.16/m ²
2	PDKV Field	- 4 - - 7 - 5 - 3 -	19	1.9pt/m ²	-----	-----
		- × - - × - × - × -		-----	40%pt/m ²	-----
		19 Species occurred	4	-----	-----	4.75/m ²
3	Savner Field	1 3 - 5 1 - 6 - 3 -	19	1.9pt/m ²	-----	-----
		× × - × × - × - × -		-----	60%pt/m ²	-----
		19 Species occurred	6	-----	-----	3.1/m ²

Ethnomedicinal importance :

**Leucas aspera* used to treat inflammatory and allergic conditions.

*The entire plant is also used as an insecticide and indicated in traditional medicine for cough, colds, painful swelling and chronic skin eruption ⁵

*Apart from this, the plant possesses wound healing property and is used in cobra venom poisoning⁶.

*A mixture of leaves and charcoal applied on the wounds of cattle to kill worms.

*This leafy vegetable is rich in Calcium, magnesium potassium, iron and vitamins such as vitamin C, vitamin D and vitamin E.⁽¹⁰⁾

* *Leucas aspera* is used commonly as an insecticide.^[11]

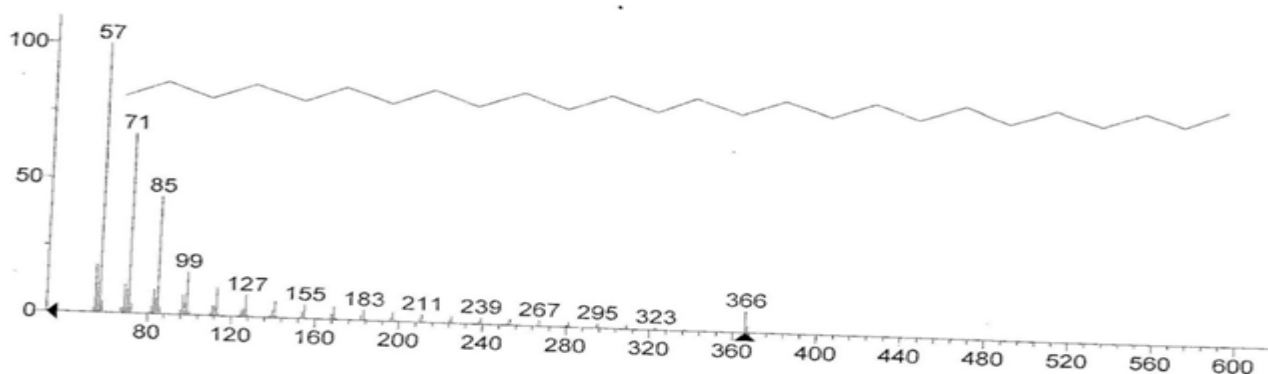
*Aromatic oil is found in 1.33% in 3gm of dry weight of powder of leaves of *Leucas aspera*.

Table1: The chemical Components *Leucas aspera* (L)

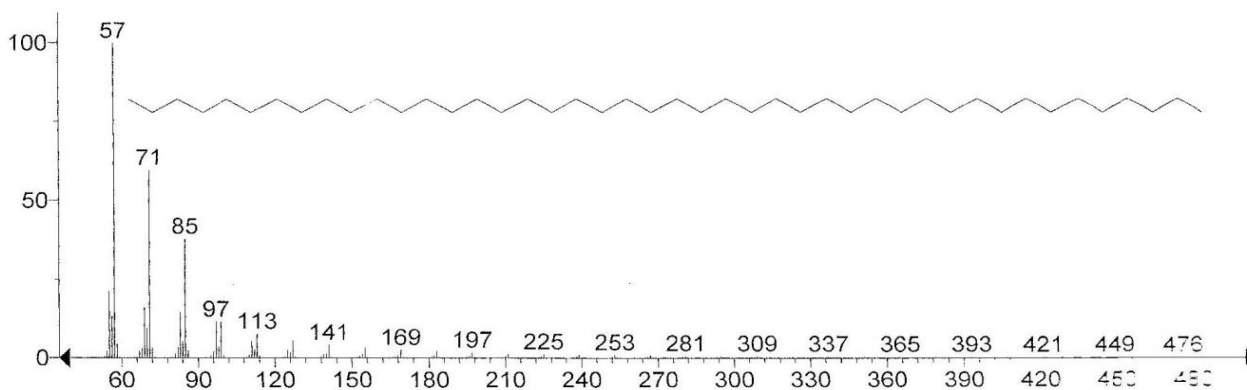
S. N.	R.T.	Name of compound	Molecular formula	Mol. Weight	Peak Area
1	13.6	9,9 trimethyloctahydrbenzo (d) cycloprop(c) oxepin-2,4-dione	C ₁₄ H ₂₀ O ₃	236	137364
2	13.6	3-Buten-2-one,3-methyl-4-(1,3,3-trimethyl-7-Oxabicyclo[4.1.0]heptan-1-	C ₁₄ H ₂₂ O ₂	222	137364

		yl)-			
3	14.2	Tetratriacontane	C ₃₄ H ₇₀	478	113304
4	14.2	Hexacosane	C ₂₆ H ₅₄	366	113304
5	21.7	Heptacosane	C ₂₇ H ₅₆	380	582218
6	21.7	Tetratetracontane	C ₄₄ H ₉₀	618	582218

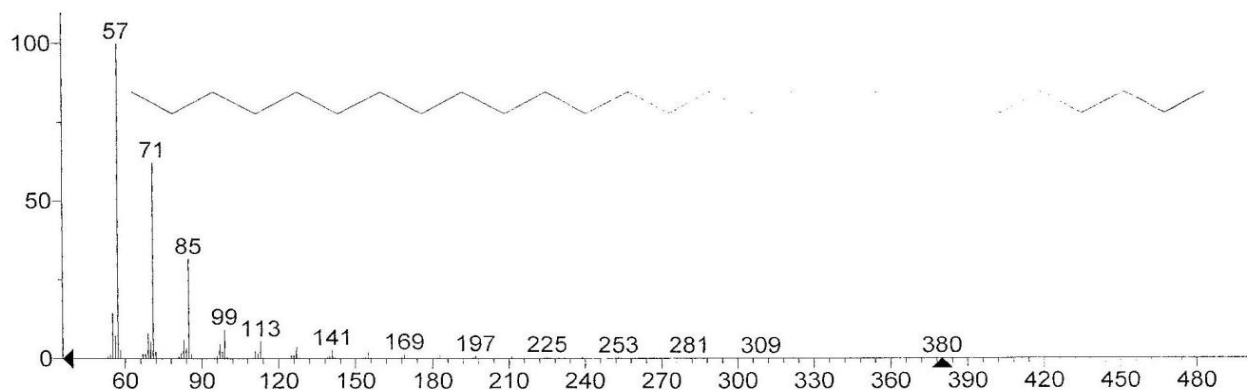
Hit 2 : Hexacosane
 C₂₆H₅₄; MF: 501; RMF: 658; Prob 25.9%; CAS: 630-01-3; Lib: replib; ID: 5765.



Hit 1 : Tetratetracontane
 C₄₄H₉₀; MF: 743; RMF: 804; Prob 7.39%; CAS: 7098-22-8; Lib: replib; ID: 5520.



Hit 2 : Heptacosane
 C₂₇H₅₆; MF: 736; RMF: 850; Prob 5.66%; CAS: 593-49-7; Lib: replib; ID: 5509.



IV. CONCLUSION

Most of the 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, antipyretic and anti-inflammatory drug which needs to be validated through preclinical and safety and efficacy trials. Their ecological study suggests that these plants are tropical wild herbs, having aromatic smell and are perennial, but. The present investigation concluded that the density, frequency and abundance of *L. aspera* vary at the various sites, viz. Gorewada, PDKV, and Savner due to the edaphic factors and climatic conditions as well as the water sources available at the particular sites therefore the present observations may conclude that, it is exotic and well adapted for the extreme atmospheric conditions. The present GC-MS screenings are an essential tool for confirmation of the results and it may serve as a pavement for the researcher to select a group of plants having similar chemical constituents and their detailed investigation regarding their chemistry and functions is required, so that they can be used in allopathic or in Ayurvedic medicine as well as cosmetics industry.

V. REFERENCES

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