IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Pharmacognostical And Preliminary Phytochemical Investigation Of *Leucas Cephalotes*

Dhruva Kumar * Dr. Munesh Mani

Faculty of Pharmacy, IFTM University, Moradabad, U.P. India

ABSTRACT

Leucas cephalotes is a rainy season weed and has been traditionally used as mild stimulant, diaphoretic, fever and liver disorder. The present study was carried out to investigate Pharmacognostical and phytochemical screening of leaf. In the Pharmacognostical studies, leaves showed the presence of vascular bundle, sessile glandular trichomes, palisade and anomocytic stomata. Ash value, extractive value, and moisture content was determined for quality standard of drugs. The powdered drugs were defatted with petroleum ether and successively extract performed with different polar solvents. Phytochemical investigation shows the presence of flavanoids, phenol, phytosterol and tannins. The result of the study could be useful for identification and preparation of monograph of the plant.

Key Words: *Leucas cephalotes*, Phytochemical screening, Pharmacognostic

INTRODUCTION

Leucas Cephalotes (Roth) Spreng. (Lamiaceae) rainy season weed mainly found in North India. It is a valuable drug for snake bite. The plant is useful in bronchitis, inflammation, asthma, dyspepsia, paralysis and leucoma. The leaves are useful in fever and urinary discharge. According to Ayurveda, the plant is mild stimulant, diaphoretic and used in fever and also used in liver disorder. The plant was evaluated for in vitro antifilarial activity and antidiabetic activity.

Pharmacognostical studies involve the detailed examination of various macroscopic and microscopic characteristics of the plant leaves. These studies are essential to verify the authenticity and quality of the plant material and provide crucial information for identification and standardization purposes. Additionally, phytochemical analysis allows for the detection and quantification of bioactive compounds, providing insights into the potential medicinal properties of *Leucas cephalotes*

The objectives of the present study was to establish various Pharmacognostical standards and to evaluate preliminary phytochemical and physiochemical analysis that can facilitate identification and assist in the preparation of monograph of the plant.

MATERIALS AND METHODS

Collection and Authentication of the Plant Material: The plant of *Leucas cephalotes* was collected from the area of Jhunsi, Prayagraj, U.P. and authentication by Taxnomist, Botanical Survey of India, Prayagraj Uttar pradesh.

PHARMACOGNOSTICAL EVALUATION

- **Microscopical Evaluation of Leaf of *Leucas cephalotes***

The leaf was cut thin transverse section through the midrib portion with help of sharp blade and put thin section with the help of camel brush in the clean watch glass and added potassium hydroxide use as clearing agent and conc.(1:1) HCl transfer a thin uniform section to this solution which was prepared slides and observed under the compound microscope at 100 X.5

- **Physicochemical Evaluation of Leaf of *Leucas cephalotes***

The determination of various physiochemical parameters such as total ash, acid insoluble ash, water soluble ash, water soluble extractive value, alcoholic soluble extractive value, foaming index , moisture content. were calculated as per Indian pharmacopoeia.

- **Preliminary phytochemical screening**

For preliminary phytochemical screening, 50gm of powdered drug was extracted with petroleum ether (60-80), ethyl acetate, ethanol and water successively. The extract obtained from successive solvent extraction. Then subjected to various qualitative chemical tests to determine the presence of the various phytoconstituents like alkaloids, glycosides carbohydrates phenolics and tannins, fixed oils and fats, protein and amino acids, flavanoids, saponins.

- **FLUORESCENCE ANALYSIS**

The fluorescence analysis of the powdered leaves of *Leucas cephalotes* shown and were studied under UV light of the powdered samples with different chemicals reagents at 254 nm, 365 nm and ordinary light.

- **PHYTOCHEMICAL SCREENING**

For preliminary phytochemical screening, 50 g of powder drug was extracted with petroleum ether (60-80), benzene, chloroform, ethyl acetate, methanol and water successively. The extracts ob-tained from successive solvent extraction were then subjected to various qualitative chemical tests to determine the presence of various phyto-constituents like alkaloids, glycosides, carbohydrates, phenolics and tannins, phytosterols, fixed oils and fats, proteins an amino acids, flavonoids, saponins, gums and mucilage using method describe in Khandelwal .

RESULTS AND DISCUSSION

Macroscopic character

The macroscopic character was useful in quick identification of plant material and also serves as important standardization parameter. Organoleptic evaluation of leaves of *Leucas cephalotes* were found to be lanceolate with serrate margins and prominent midribs.

Table No. 1: Morphological Characters [4] of Leaf of *Leucas cephalotes*

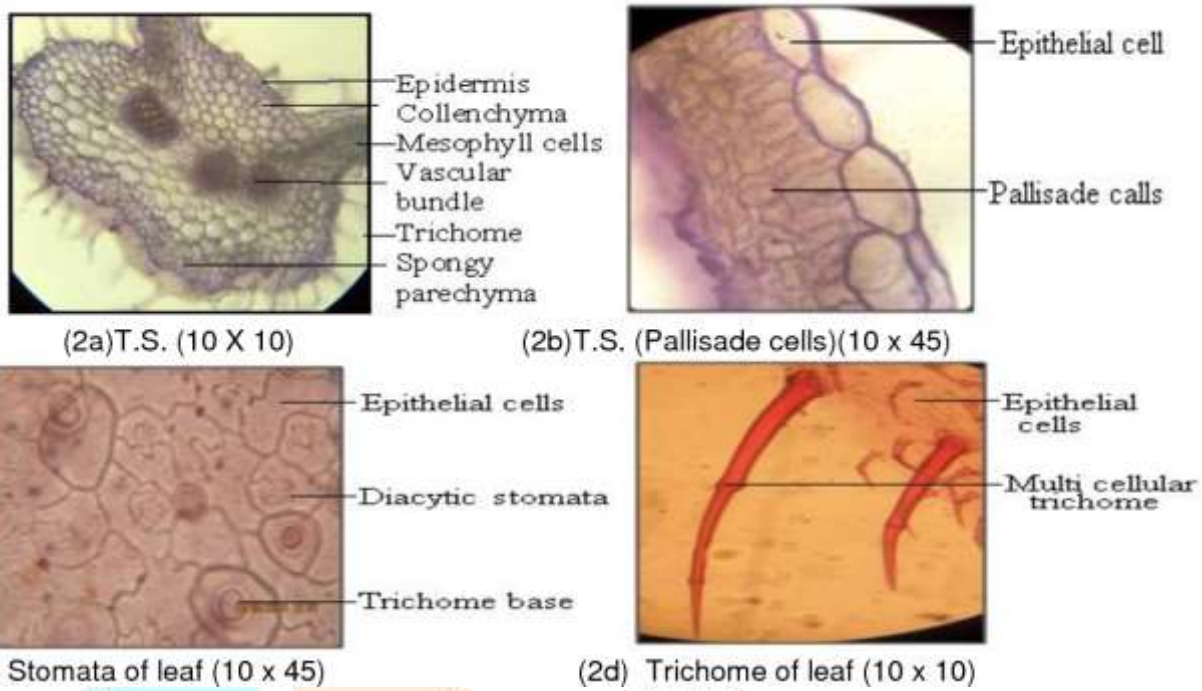
S. No.	Characteristics	Observation
1.	Apex	Acute
2.	Margin	Serrate
3.	Base	Attenuate
4.	Mid rib	Prominent
5.	Veins	Pinnate
6.	Size	2-5cm
7.	Shape	Lanceolate
8.	Taste	Bitter/ slightly pungent
9.	Color	Greenish yellow
10.	Odour	Aromatic

Figure 2. Leaf of *Leucas cephalotes*

Microscopic characters

The microscopic character of the leaf of *Leucas cephalotes* includes midrib shows single layered upper epidermis interrupted by abundant glandular and few non glandular trichomes followed by single layered palisade cells in lamina portion. Midrib shows arc shaped vascular bundles, bicollateral, 2 to 4, present in centre, lower portion of the midrib is occupied by collenchymatous cells. Both simple and glandular trichomes are present, former being plenty on lower surface, uniseriate 2 to 3 celled with pointed apex, latter, stalked with 2 to 4 celled and unicellular head, the sessile glandular trichomes with 2 to 6 cell head. Stomata pre-sent only on lower side and are anomocytic.

Figure 2: Transverse sections of leaf *of Leucas cephalotes* Spreng



(2a)T.S. (10 X 10) (2b)T.S. (Pallisade cells)(10 x 45)

(2c) Stomata of leaf (10 x 45) (2d) Trichome of leaf (10 x 10)

PHYSICO -CHEMICAL PARAMETER

Table No. 2: Physicochemical Parameters of Leaves of *Leucas cephalotes*

Physico chemical parameter	**Value(%w/w)**
Ash values	
a) Total ash	12.65% w/w
b) Acid insoluble	7.45 % w/w
c) Water soluble	3.6 % w/w
Extractive values	
a) Ethanol soluble	10.4 % w/w
b) Water soluble extractive	16 % w/w
Moisture content	
Loss on drying at 110°C	11.66 % w/w

Preliminary phytochemical screening

S.No.	Chemical constituents	Pet. Ether Extract	Ethyl acetate Extract	Ethanolic Extract	Aqueous Extract
1.	Alkaloids	-	-	-	-
2.	Carbohydrates	-	-	+	+
3.	Glycosides	-	-	+	+
4.	Proteins	-	-	-	-
5.	Tannins and Phenolic compounds	-	-	+	+
6.	Flavonoids	-	-	-	-
7.	Fats And Oils	+	-	-	-
8.	Saponins	-	-	-	-
(+): Presence, (-): Absence					

Preliminary Phytochemical Screening to identify the presence of various phytochemicals in Hydro-alcoholic extract of leaves of *Leucas cephalotes.*

Table No. 4: Fluorescence Analysis of the Powdered Leaves of *Leucas cephalotes*

S/No.	Treatment with Chemical Reagents	Observation 254nm	Observation 365nm	Day Light
1.	Powder as such	Deep green	Light green	Green
2.	Powder+1N Sodium Hydroxide Solution	Brown	Brown	Dark brown
3.	Powder +1N sodium hydroxide in water	Green	Green	Light green
4.	Powder +50%hydrochloric acid	Yellowish brown	Yellowish brown	Brown
5.	Powder+50%sulphuric acid	Yellowish green	Yellowish green	Green
6.	Powder+50%nitric acid	Green	Light Green	Dark green
7.	Powder+ petroleum ether	Green	Green	Dark green
8.	Powder+ chloroform	Deep green	Deep green	Light green
9.	Powder+ picric acid	Green	Green	Greenish black
10.	Powder+5%ferric chloride solution	Blue	Light Blue	Dark blue
11.	Powder+5%iodine solution	Deep brown	Deep brown	Light brown
12.	Powder+ methanol	Light green	Light Green	Green

13.	Powder+(nitric acid+ ammonia)	Green	Light Green	Light green

CONCLUSION

In present investigation various standaradization such as macroscopy, microscopy, physico-chemical parameter and phytochemical screening were carried out which could helpful in authentication of Leucas cephalotes. The result of present study will also serve as reference material in preparataion of monograph.

ACKNOWLEDGEMENTS

The author thanks the Faculty of pharmacy and IFTM University for providing necessary facilities.

REFERENCES

1. Kirtikar KR, Basu BD. Indian Medicinal Plants, vol 3. International book Distr.; 2005, 2017-2018.

2. Caius JF. The medicinal and poisonous plants of India. Jodhpur, India: Scientific Publ.; 1986, 397-399.

3. Ghosh NC. Comparative materia medica. Kolkata, India: Hanneman Publ. Co. Private Ltd; 1988

4. Khare CP. Indian Medicinal Plants. Springer (India) Private Limited; 2007, 372.

5. Qamaruddin Parveen N, Khan NU, Singhal KC. In vitro antifilarial potential of the flower and stem extracts of Leucas cephalotes on cat-tle filarial parasite Setaria cervi. Journal of Natural Remedies. 2002; v. 2(2): 155-163.

6. Shivendu Mishra. Antidiabetic Activity of Leucas cephalotes (roth) Spreng. in Alloxan Induced Diabetic Rats. International Confer-ence on Promotion and Development of Bo-tanicals, Kolkata 2002; February 25-26: SNPS/CB/5S-003.

7. Miyaichi Y, Segawa A, Tomimori T. Studies on Nepalese crude drugs. XXIX. Chemical constituents of Dronapuspi, the whole herb of Leucas cephalotes SPRENG. Chem Pharm Bull (Tokyo) 2006; Oct 54(10): 1370-9.

8. Bahadur KD, Sen AB. Chemical examination of Leucas cephalotes. Quart J Crude Drug Res 1969; 9: 1453-1454.

9. Sinha S, Ansari AA, Osman SM. A new seed oil rich in laballenic acid. Chem Ind 1978; 1: 67. 10. Kokate C, Purohit A, Gokhale S. Practical Pharmacognosy. Edn

10. New Delhi, India: Vallabh prakashan; 1994, 112-120.

11. Trease GE, Evans W C. Pharmacognosy. Edn 15. New Delhi; WB Saunders Company Ltd: 1996, 516-547.

12. Anonymous, Pharmacopoeia of India, Vol II, Govt of India , Ministry of health, controller of publication , New Delhi, 1996, A-53-54

13. Khandelwal KR, Pawar AP, Kokate CK and Gokhale SB. Practical Pharmacognosy. Pune; Nirali Prakashan: 2001, 19-153.