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Pharmacognostical and Preliminary Phytochemical investigation of *Leucomeris spectabilis*.

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ABSTRACT

Leucomeris spectabilis is a medicinal plant widely known for its traditional use in various folk remedies. The present study was carried out to investigate morphological, microscopical and phytochemical screening of Leaves of *Leucomeris spectabilis*, aimed at unraveling its therapeutic potential and validating its traditional medicinal claims.

In the microscopical studies, leaves showed the presence of epidermis at the upper surface. The epidermis on the outside is covered with thick cuticle. It is differentiated into the palisade parenchyma composed of tall compactly placed cells and the spongy parenchyma comprising oval or round loosely-arranged cells with inter cellular spaces. The vascular bundles which are the conducting tissues called xylem and phloem present and are conjoint and closed.

Ash value, extractive value, foreign organic matter and moisture content was determined for quality standards of drugs. The powdered drugs were defatted with petroleum ether and successive extraction was performed. Phytochemical investigation shows the presence of Alkaloids, glycoside, flavonoids, phenolics, and saponins. Fluorescence analysis were carried out under UV light. The result of the study could be useful for identification and preparation of monograph of the plant.

Keywords: *Leucomeris spectabilis*, pharmacognostical studies, phytochemical analysis.

INTRODUCTION

Leucomeris spectabilis, a member of the Asteraceae family, is a traditional medicinal plant that has been widely used in various folk remedies for centuries. Its therapeutic potential is attributed to a rich array of bioactive compounds found in different plant parts. In recent years, there has been a growing interest in investigating the pharmacognostical aspects of *Leucomeris spectabilis* to scientifically validate its traditional medicinal claims and explore its potential applications in modern healthcare.¹

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 *Leucomeris spectabilis*.²

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 *Leucomeris spectabilis* was collected from the area of Jhunsi, Prayagraj,U.P. and authentication by Taxnomist, Botanical Survey of India, Prayagraj Uttar pradesh. The leaves of *Leucomeris spectabilis* were dried in shade and then powder with a mechanical grinder. The powder was passed through sieve no. 40 and stored in a labeled air tight container for further studies.³

PHARMACOGNOSTICAL EVALUATION

❖ **Microscopical Evaluation of Leaf of *Leucomeris spectabilis***

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:**

The determination of various physicochemical 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.³

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 phytoconstitents 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 *Leucomeris spectabilis* shown in table 4 were studied under UV light of the powdered samples with different chemicals reagents at 254 nm, 365 nm and ordinary light.

❖ **PHYTOCHEMICAL SCREENING⁹**

Preliminary phytochemical screening of the HAE was carried out for detection of the presence of various phyto-constitents. where alkaloids, glycosides, flavonoids, phenolic compounds, tannins, saponins was found and fat, protein, amino acids and steroids was absent.

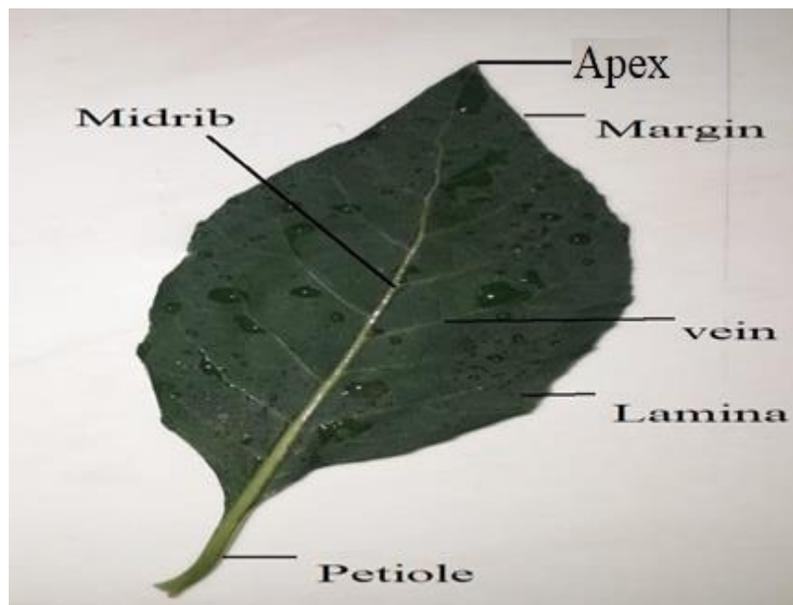
RESULTS AND DISCUSSION

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 *Leucomeris spectabilis* were found to be lanceolate with serrate margins and prominent midribs.

Table No. 1: Morphological Characters ⁴ of Leaf of *Leucomeris spectabilis*

S. No.	Characteristics	Observation
1.	Apex	Acuminate
2.	Margin	Serrated or toothed
3.	Base	Cordate or rounded
4.	Mid rib	Prominent
5.	Veins	Pinnate
6.	Size	50-100cm
7.	Shape	Ovate
8.	Taste	Bitter
9.	Color	Greenish yellow
10.	Odour	Odorless

**Figure 2. Leaf of *Leucomeris spectabilis*****Microscopic characters**

The microscopic characters of the leaf of *Leucomeris spectabilis* include features like trichomes, epidermal cells and vascular bundles.. Trichomes are unicellular. Epidermal cells found on the outermost layer of the leaf revealed the presence of anomocytic stomata, vascular bundles

contains the xylem and phloem for transporting water and nutrients. All the reported observations confirmed that its dicotyledonous nature⁴.

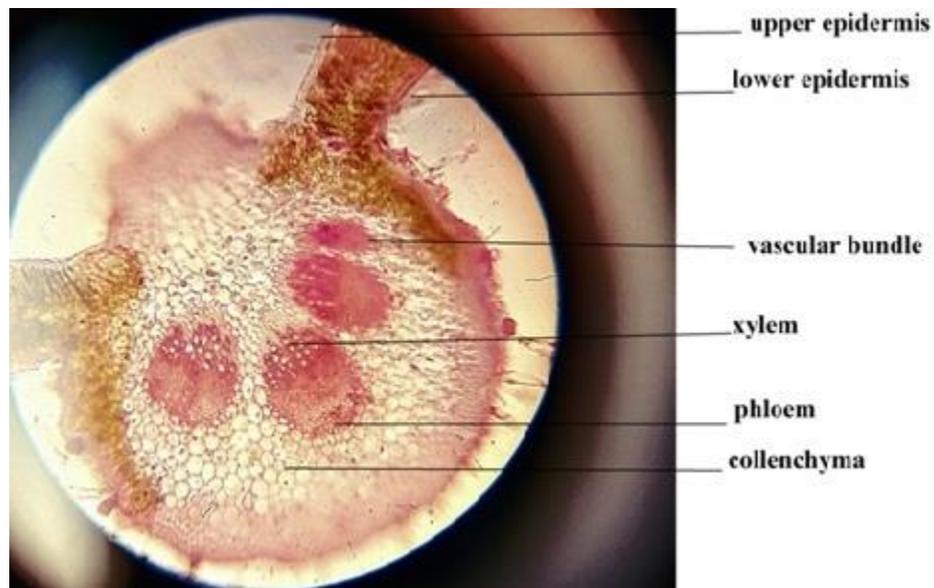


Figure.3. T.S. of leaf of *Leucomeris spectabilis* at 100 X



Calcium oxalate crystal



Trichomes



Stomata lower epidermis



Stomata upper epidermis

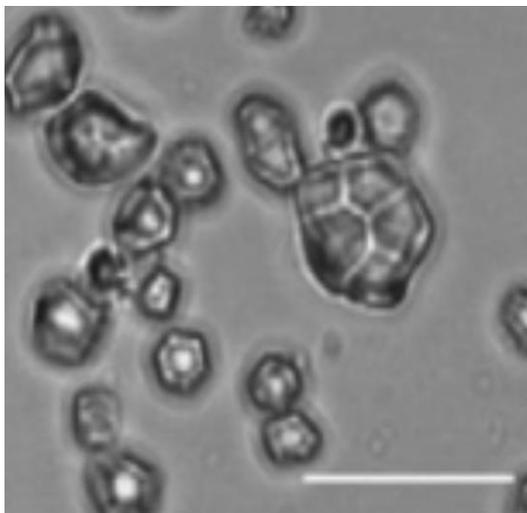


Image of Starch

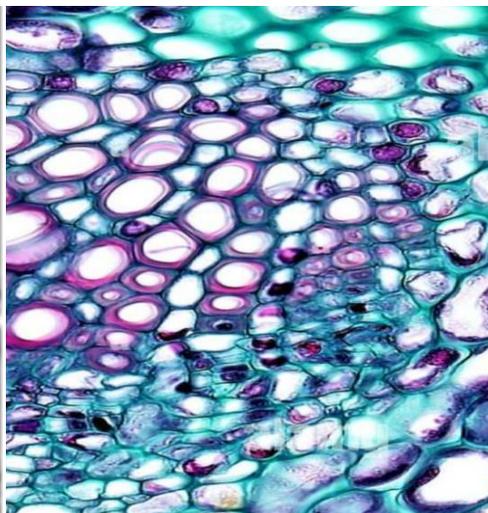


Image of Vascular bundle

PHYSICO -CHEMICAL PARAMETER**Table No. 2: Physicochemical Parameters of Leaves of *Leucomeris spectabilis***

Physico chemical parameter	Value(%w/w)
Ash values	
a) Total ash	4.5
b) Acid insoluble	1.5
c) Water soluble	2.5
Extractive values	
a) Ethanol soluble	15
b) Water soluble extractive	20
Moisture content	
Loss on drying at 110°C	2.8

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	-	-	+	+

Preliminary phytochemical screening

(+): Presence, (-): Absence

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

Table No. 4: Fluorescence Analysis of the Powdered Leaves of *Leucomeris spectabilis*

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 standardization such as macroscopy, microscopy, physico-chemical parameter and phytochemical screening were carried out which could be helpful in authentication of *leucomeris spectabilis*. The result of present study will also serve as reference material in preparation of monograph.

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