ISSN 2278- 4136

ZDB-Number: 2668735-5

IC Journal No: 8192

Online Available at www.phytojournal.com

Journal of Pharmacognosy and Phytochemistry

Organoleptic and Microscopic Analysis of *Gentiana regeliana*

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Organoleptic and microscopic examination revealed various diagnostic characters. Stem (dried, 30-40 cm long, light brown having characteristic odour with bitter taste and smooth texture), flower (dried, 3-5 cm long and crumpled, dark brown to blue in color having characteristic odour and bitter taste with smooth texture), leaf (dried, 7-8 cm long and broken, brownish green, characteristic odour, bitter in taste and smooth texture). The transverse section of the stem (hollow in between) of *Gentiana regeliana* Gand. showed presence of epidermal cell and abundant xylem vessels. Stomata arrangement was anisocytic and anomocytic with numerous non-glandular trichomes on both surfaces. These findings should be expedient for inclusion in the Pharmacopoeia of Medicinal plants.

Keyword: Gentiana, Microscopy, Macroscopic

1. Introduction

Gentiana regeliana Gand. is perennial stem upto 40 cm tall grows at an altitude of 350-2300 meters mostly erect, slender, simple, glabrous. Linear-elliptic to elliptic lanceolate leaf with distinct veins. Flowers are arranged in terminal corymbose cymes with 3-5 flowers with 3-5 cm slender pedicel. Seeds are of capsules ellipsoid type with seed coat thick reticulate having 0.8-1 mm in size [1-5]. *Gentiana regeliana* Syn. *Gentiana olivieri* is used in traditional medicine in Unani and Ayurveda system of medicines in arthritis, anti-inflammatory, antidepressant, antiulcerogenic, gastroprotectant and sudorific. It has been also employed as a hepatoprotective, aphrodisiac plant in Turkey [6-7]. The objective of the present study is to evaluate various pharmacognostic standards like macroscopy and microscopy of *Gentiana regeliana* Gand.

2. Materials and Method:

2.1 Organoleptic Studies

The plant material was procured from Global Herbal Store, Delhi. Macroscopic investigation (evaluation of drugs by color, odour, size, shape, taste and special features including touch and texture etc.). Organoleptic evaluation can be done by means of organs of sense which includes the above parameters and thereby define some specific characteristics of the material which can be considered as a first step towards establishment of identity and degree of purity [8]. The organoleptic investigations (color, shape and size, odour and taste, surface characteristics and texture) were performed.

2.2 Microscopic Studies (Transverse section of *Gentiana regeliana* Gand. stem)

Microscopic characteristic parameters were studied in entire and powdered form and photographs have been taken using digital

microscope. To study microscopic characters of *Gentiana regeliana* Gand. stem, transverse sections of fresh stem were prepared with the help of sharp blade. The lignified tissues were distinguished by using safranin stain. For this free hand sections of stem were placed for two min. in the safranin solution in a petriplate and washed in other petriplate containing distilled water. Then the sections were mounted on clean glass slide with help of glycerin water and covered by glass cover slip. Then slides were observed under light microscope.

2.3 Powder Microscopy

A small amount of powder was taken and boiled with chloral hydrate to remove chlorophyll. Then stained with phloroglucinol solution for few minutes and followed by concentrated hydrochloric acid (1:1) in watch glass. It was mixed well and allowed to stand for about 3 min. It was then mounted in glycerin (50%) and observed under microscope. Similarly, the powder was also stained with weak iodine (N/50) solution for the identification of starch grains. Powder was treated with conc.H_2SO_4 for the identification of calcium oxalate crystals [8]. The powder microscopic characters were noted.

3. Results

3.1 Organoleptic study:

The results were obtained in study of *Gentiana regeliana* Gand. aerial part (Table 1)

Table 1: Organoleptic features of *Gentiana regeliana*

Particulars	Stem	Flower	Leaf
Condition	Dried	Dried and crumpled	Dried and broken
Color	Light brown	Dark brown and blue	Brownish green
Odour	Characteristic	Characteristic	Characteristic
Taste	Bitter	Bitter	Bitter
Texture	Smooth	Smooth	Smooth
Size	30-40 cm	3-5 cm	7-8 cm

3.2 Powder Microscopy

Table 2: Diagnostic Characters of *Gentiana regeliana* Gand. Powder

S. No.	Features	Observation
1	Nature	Coarse powder
2	Color	Buff brown
3	Odour	Characteristic aromatic
4	Taste	Bitter
Microscopy		
5	Trichomes	Non-glandular
6	Stomata	Anisocytic and anomocytic
7	Calcium oxalate crystals	Absent
8	Oil globules	Present (scattered)
9	Fibres	Present

3.3 Microscopic study

The transverse section of the stem (Fig.1) of *Gentiana regeliana* showed presence of epidermal cell and abundant xylem vessels (Fig.3). The stem is hollow in between. Stomata arrangement was anisocytic and anomocytic (Fig.5) with numerous non glandular trichomes (Fig.7) on both surfaces. Scattered oil globules are persistent (Fig.4).

Fig 1: T.S. of Stem

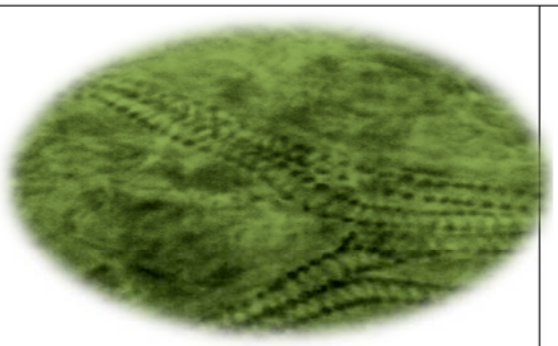

Fig 2: Veins

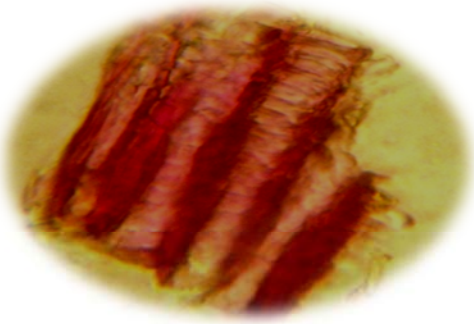

Fig 3: Xylem vessels

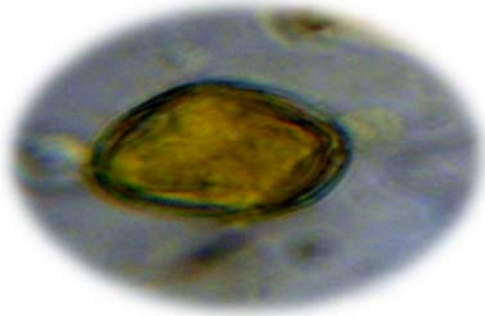

Fig 4: Oil Globule

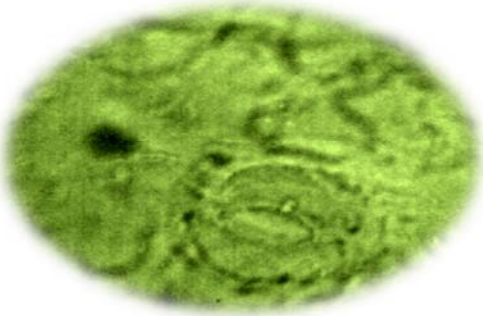

Fig 5: Stomata

Fig 6: Fibre

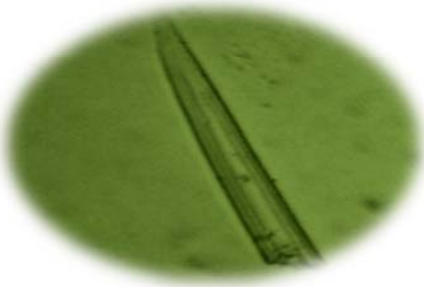

Fig 7: Non-glandular Trichome

4. Conclusion

The plant *Gentiana regeliana* Gand. showed the precise taxonomy which is significant for the standardization of drug. Findings of the present

investigation will be useful for the appropriate botanical identification and authentication of the drug. After getting the overall results of *Gentiana regeliana* Gand. and if, these are comparable with other species of *Gentiana*, it will be used as a substitute for them especially for *Gentiana olivieri* Griseb.

5. Reference

1. Arya V, Thakur N, Kashyap CP. Medicinal vigor of Gul-e-ghafis (*Gentiana olivieri* griseb). A Review. Unani research 2011; 1(2):12-17.
2. Zheng W, Raven PH. Flora of China http://www.efloras.org. 1994.
3. Tuzan CY, Toker MC, Toker G. Anatomical investigations on root, stem and leaf of *Gentiana olivieri*. Pharmacogn Mag 2011; 7(25):9–13.
4. Kirtikar KR, Basu BD. Indian medicinal plants. Ed III, Lalit Mohan Basu, Allahabad, India, 1998, 1663.
5. Chopra RN, Nayar SL, Chopra C. Glossary of Indian medicinal plants. NISCAIR Delhi 2006; 324-325.
6. Aktay G, Deliorman D, Ergun E, Ergun F, Yesilada E, Cevik C. Hepatoprotective effects of Turkish folk remedies on experimental liver injury. J Ethnopharmacol 2000; 73(1-2):121-129.
7. Ozturk F, Olcuc C. Ethnobotanical features of some plants in the district of şemdinli (hakkari-turkey). International journal of academic research 2011; 3(1):20-29.
8. Khandelwal KR. Practical Pharmacognosy Techniques and Experiments. Ed 9th, Nirali Prakashan, Pune, 2003.