



PHARMACOGNOSTICAL EVALUATION ON THE ROOT OF ROTULA AQUATICA LOUR.

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ABSTRACT

The root of *Rotula aquatica* is also called as pashanbed, belonging to the family Borogenaceae. It is widely distributed in India from kumaun to Assam and western to southern India. The medicinal values of plant lie in their component phytochemicals such as alkaloids, flavonoids, phenolic compounds and other nutrients like as amino acid, proteins, which produce a definite physiological action on the human body.

The present study attempts pharmacognostic studies of root, extraction, identification of chemical constituents from the crude extracts of different extracts of *Rotula aquatica*. Macroscopic as well as microscopic studies of any crude drug are the primary steps to establish its botanical quality control before going to other studies.

Hence pharmacognostic studies of crude drug play a very important role in identifying the purity and quality of crude drugs. The present investigation reveals pharmacognostic characters which include morphology, T.S, Powder microscopy, Phytochemical screening, and further isolation and identification of Phytoconstituents from ethanolic extract of *Rotula aquatica*.

KEY WORDS

Rotula aquatica, phytochemicals, Ethanolic Extract.

INTRODUCTION

Herbal system of medicine has been practiced since historical times and traces its roots to ancient civilizations. Although, we define alternative systems of healing as subjects that are not taught in medical schools, it is worthwhile to mention that before the availability of synthetic drugs, plant-based remedies formed the basis of primary healthcare system. Herbal infusion, decoction and tinctures were house-hold remedies for common ailments¹.

The root of *Rotula aquatica* is also called as pashanbed, belonging to the family Borogenaceae. It

is widely distributed in India from kumaun to Assam and western to southern india^{2,3}.

The plant contain Baunerol, steroid, alkaloid, and rhabdiol. The medicinal values of plant lie in their component phytochemicals such as alkaloids, flavonoids, phenolic compounds and other nutrients like as amino acid, proteins, which produce a definite physiological action on the human body. A systematic search for useful bioactivities from medicinal plants is now considered to be a rational approach in nutraceutical and drug research^{4,5}.



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Material and Method

Collection of plant material

Dried Root *Rotula aquatica* were collected and authenticated by Alva's education foundation Moodbidri. The roots were powdered dried, stored in airtight containers for further use.

T.S of the root

Procedure Few dried roots were soaked in water for some time (till it get soften). The roots cut in the slices with the help of a sharp blade thin transverse sections were taken and placed in a watch glass; the sections were cleared by warming in chloral hydrate solution and stained with staining reagents containing a mixture of phloroglucinol and concentrated hydrochloric acid. Dilute hydrochloric acid and glycerol were used as mounting fluids for stained and unstained sections respectively^{6,7}.

Powder microscopy

Procedure Roots powder sieved through 60 mesh and was used for studying the powder characters. A pinch of powder was taken on a glass slide, treated with chloral hydrate solution, glycerin and water and observed under microscope using 45X and 10X objective lens for different characters.

A drop of phloroglucinol and conc.Hcl was used to detect lignin content of the powder⁸.

RESULT AND DISCUSSION

Macro-morphological evaluation of root

- ❖ **Surface appearance and texture:** hardy and woody.

- **Periderm**
 - **Cork:** - Several layer of thin walled, flat, polygonal cells with reddish brown content, impregnated with suberin.
 - **Phellogen:** - 2 to 3 layers of thin walled cells without any cellular content.
 - **Phelloderm :-** 6 to 8 layers of thin walled rectangular cells without any cellular content.
- **Cortex :-**Oval shaped stone cells, isolated or in groups.
- **Medullary rays :-** Narrow at inner side, wider in the scleride band side, acicular raphides.
- **Phloem fiber :-** Single, isolated, circular, lignified with stratification^{9,10}.
- **Powder characters of *Rotula aquatica* Root**
 - Cork cells are seen in surface view.
 - Stone cell are present.
 - Xylem vessels are observed in the powder.

The present study attempts pharmacognostic studies of root, extraction, isolation, identification of chemical constituents from the crude extracts, and anthelmintic activity studies of different extracts of *Rotula aquatica*. Macroscopic as well as microscopic studies of any crude drug are the primary steps to establish its botanical quality control before going to other studies.

Hence pharmacognostic studies of crude drug play a very important role in identifying the purity and quality of crude drugs.

In the present study the arrangement of tissues in transverse section and type of cells are studied with the aid of microscope^{11,12}.

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Microscopy

Fig No 1: Transvers section of the root of *Rotula aquatica* Lour.

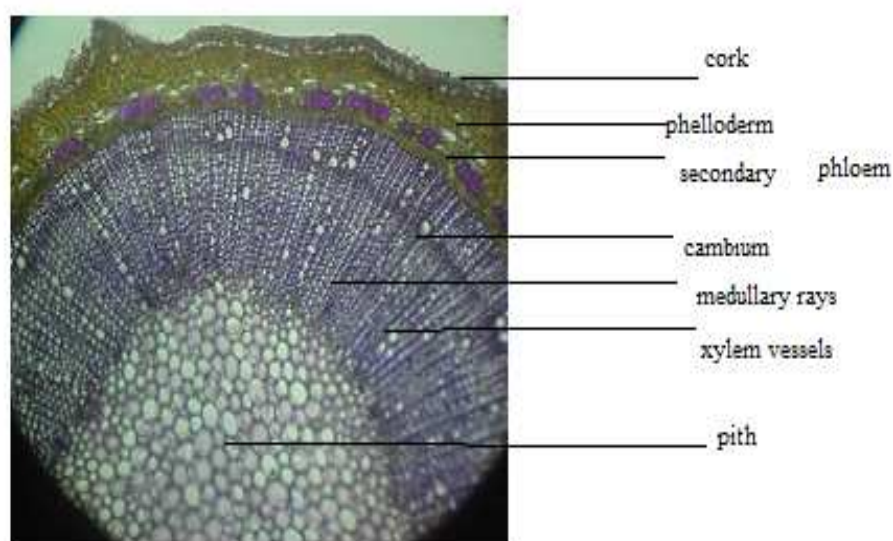
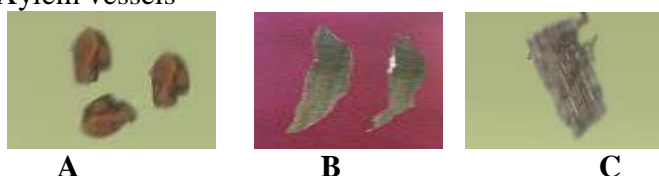


Fig No 2: Powder characteristics of *Rotula aquatica* root. 40x

(A) Stone cell (B) Fibers (C) Xylem vessels



CONCLUSION

The present investigation reveals pharmacognostic characters which include morphology, microscopy and Powder microscopy, extraction, phytochemical screening, and further isolation and identification of phytoconstituents from ethanolic extract of *Rotula aquatica*.



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