

STUDIES ON THE PHARMACOGNOSTIC CHARACTERS OF *GERANIUM WALLICHIANUM* SWEET, AND PROSPECTS OF ITS UTILIZATION

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Introduction. *Geranium wallichianum* Sweet belong to the family Geraniaceae. It is a branched herb 30-90 cm. in height with reddish brown rhizome. The plants occur in the hilly areas of Swat, Dir, Hazara, Kaghan, Murree Hills, Chitral, Kurram Agency and Azad Kashmir at an elevation of 2155-3080 metres (3).

Geranium wallichianum locally known as "ratanjot" is used in Ayurvedic and Greeco-Arab systems of medicine since ancient times. About 15,000 to 20,000 kgs of the dried rhizome are collected annually in Pakistan.

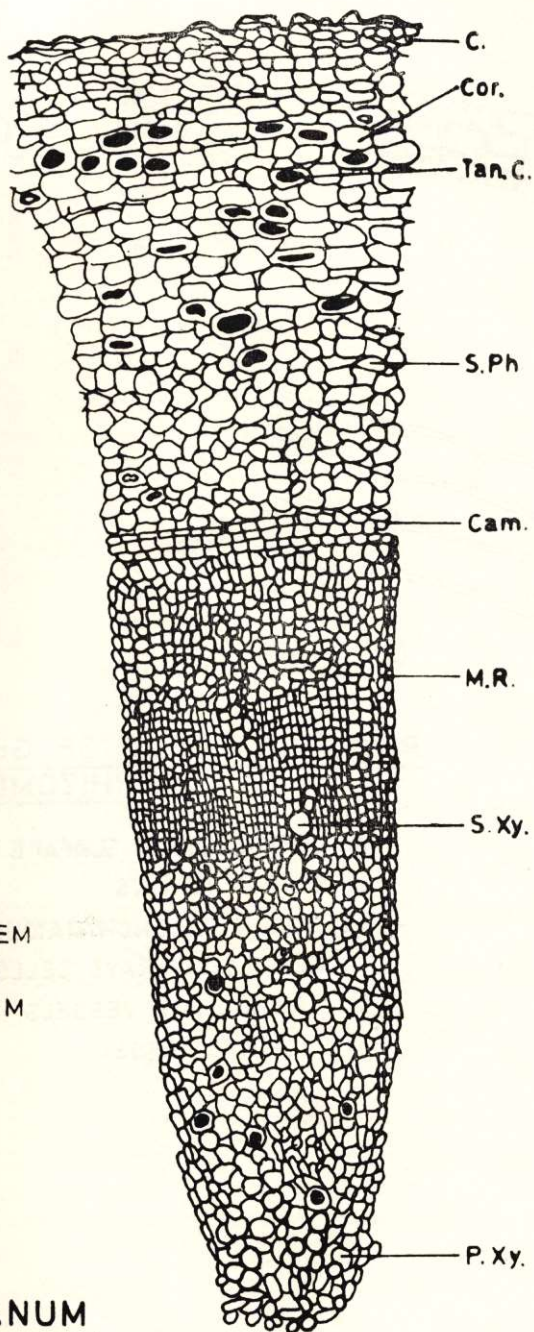
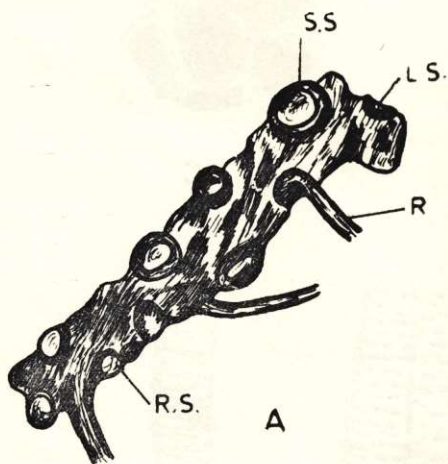
The rhizomes are valued for their powerful astringent properties. Its decoction with hydrastine is given in chronic diarrhoea, cholera and leucorrhoea. Locally it is used as a gargle for sore throat, ulceration of mouth and applied externally to sore eyes. The herb is also employed for relieving tooth ache. Rhizomes are also used for tanning hides and colouring oils in Pakistan.

Pharmacognostic studies were carried out on *Geranium wallichianum* plants in order to identify the distinguishing macroscopical and microscopical characters of the crude drug. Results are reported below:

Material and Method. *Geranium wallichianum* rhizomes were collected from Sharan (Kaghan Valley) in July, 1975. The rhizomes were cleaned and dried in the shade and later on the material was preserved in the fixative Formalin-aceto-alcohol (90cc ethyle alcohol 70%, 5cc Glacial acetic acid and 5cc Formalin 40%). The dried material was studied and physical characters i.e., shape, size, colour, smell, taste, fracture, scars and sound of breakage were noted. The powdered drug was prepared by grinding the rhizomes and sieving the material through No. 22 mesh. For histological studies sections were cut with sliding microtome and permanent slides were prepared using the method of Johnson (2).

Results. Macroscopic Characters. The crude drug is dark brown irregular rhizome from 6-12cm. in length and 0.5 to 2 cm. in diameter. The cupshaped scars of stem are visible along the upper side while circular scars of roots are visible on the lower surface of rhizome. Fracture is short and splintery. The broken ends of rhizomes show yellow vascular bundles arranged in a circular ring. The rhizome is odourless and has a slight bitter taste.

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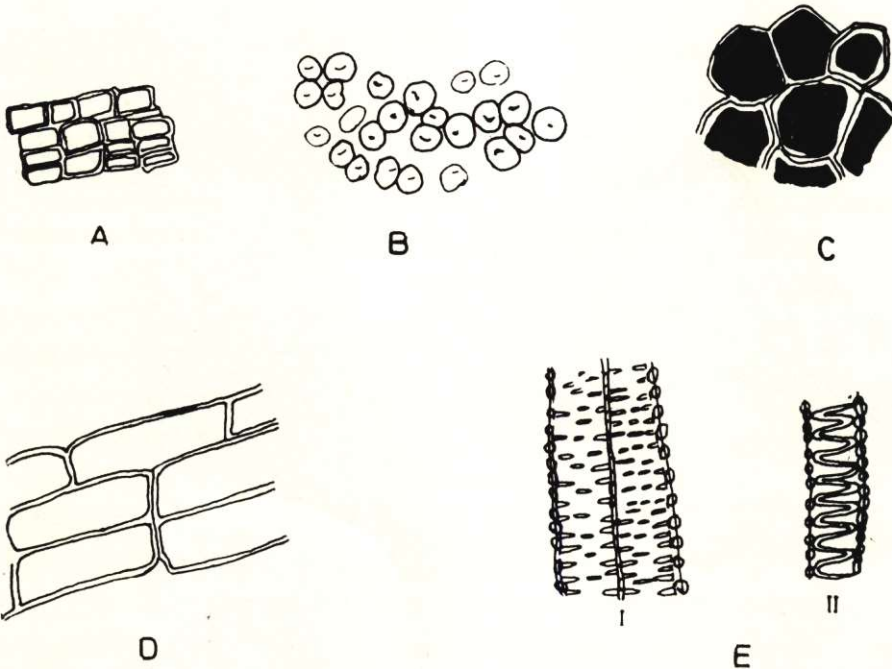


- S.S. — STEM SCAR
- L.S. — LEAF SCAR
- R.S. — ROOT SCAR
- R — ROOT
- C — CORK
- Cor — CORTEX
- Cam — CAMBIUM
- S.Ph — SECONDARY PHLOEM
- M.R — MEDULLARY RAYS
- S.Xy. — SECONDARY XYLEM
- P.Xy — PRIMARY XYLEM
- Tan.C. — TANNIN CELLS

GERANIUM WALLICHIANUM

A RHIZOME WITH ROOTS (Natural size)

B A PORTION OF TRANSVERSE SECTION OF RHIZOME X 50



POWDERED DRUG OF GERANIUM WALLICHIANUM
RHIZOME X 250

- A. CORK CELLS IN SURFACE VIEW
- B. STARCH GRAINS
- C. TANNIN PARENCHYMATOUS CELLS
- D. MEDULLARY RAYS CELLS
- E. I, RETICULATE VESSELS
- II, SPIRAL VESSEL

Microscopic Characters. The transverse section of the rhizome shows that the outer surface is covered with 6-8 layers of rectangular cork. Below the cork cells is a broad zone of parenchymatous cortex. Certain parenchymatous cells are tannin cells. Vascular bundles are arranged in a circular ring as the secondary growth has taken place and the endodermal layer is not visible. Secondary phloem is seen below the cortex which is followed by secondary and primary xylem. Medullary rays are 2-3 layers in thickness and running from centre to the phloem tissues. The centre of rhizome is occupied by primary xylem.

Powdered Drug. The powdered drug is brown in colour, odourless with slight bitter taste. Microscopic studies show the fragments of cork cells, medullary ray cells and tannin parenchyma. Reticulate and spiral vessels are also present in the powdered drug. Ovoid starch grains are in abundance and vary in size from 5-30 microns in diameter with crescent shaped hilum in the centre. Starch is in single or occasionally compound grains of two components.

Constituents. Rhizomes contain tannin, gallic acid, red colouring matter, starch, pectin and sugar.(1)

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