

Diploma in Pharmacy 1st Year

Pharmacognosy Practical

To perform the gross anatomical study (transverse section) of *Datura*

Aim:

To perform the gross anatomical study (transverse section) of *Datura*.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 67 - 70

Biological Sources:

Datura herb is made up of the dried leaves and flowering tops of the *Datura metel* Linn and *Datura metel* var. *fastuosa*, which belongs to Solanaceae family.

Materials and Apparatus Required

Datura, sharp razor, brush, dropper, needles, watch glass, microscopic slides, cover-slips, safranin, water, glycerine, and compound microscope.

Theory

- *Datura* species are herbaceous, leafy annuals and perennials that can grow up to 2 metres tall.
- The leaves are alternating and have a lobed or toothed border.
- They are 10-20 cm long and 5-18 cm wide.
- Flowers may be in variety of colours, including white, yellow, purple, lavender, and red.
- The stems are soft and upright, with a greyish green colour.
- The leaves have lobed edges and are gently furred.
- The flowers, which are several inches in diameter (9 cm).

Microscopic Character

- Bifacial structure can be seen in transverse section.
- The lamina and midrib region showed the following characteristics.
- The upper epidermis of the lamina is a single layer of rectangular cells coated with cuticle. There are both covering and glandular trichomes.
- The trichomes that cover the skin are uni-seriate, multicellular, and rough as well as have a blunt apex.
- Each glandular trichome has a single stalk with a single cell and a multicellular head. Spongy parenchyma and palisade parenchyma are found in the mesophyll.
- Palisade cells are radially elongated, single layer and densely packed. Spongy parenchyma is made up of many layers of loosely arranged micro sphenoidal crystals and vascular strands. Strips of collenchyma occur below and above the upper and lower epidermis in the midrib, followed by calcium oxalate-containing cortical parenchymatous cells.
- The lower epidermis is identical to the upper epidermis, but it has more trichomes and stomata than the upper epidermis.

Procedure

- 2-3cm of long pieces of the leaf should be taken.
- The leaf should be placed between thumb and first finger in left hand.
- The razor should be taken in the right hand with the edge of the blade facing inward and handled at right angle to it.
- The top of leaf should be dipped in water.
- The transverse section of the leaf should be cut down as soon as possible in watch glass containing water.
- The thinnest part of the leaf should be selected with the help of delicate brush.
- Then the transverse part of the leaf should be transferred in the clean watch glass with water.
- Few drops of safranin stain should be applied in the watch glass with water.
- The leaf should be left for 3-5 minutes.
- Stain should be removed and cleaned with water if required.
- The thinnest part should be placed in the center of the slide.
- A drop of glycerine should be applied over the leaf.
- The leaf should be covered with a coverslip with the help of needle.
- The leaf should be observed under a compound microscope after staining and mounting.

Result:

The gross anatomical study of Datura was performed and determined.