

# Diploma in Pharmacy 1<sup>st</sup> Year

## Pharmacognosy Practical

**To perform the Gross anatomical study (Transverse Section) of *Vasaka***

### **Aim:**

To perform the Gross anatomical study (Transverse Section) of Vasaka.

### **Reference :**

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 107 - 110

### **Biological Source :**

It is made out of dried and fresh leaves of the *Adhatoda vasica* Nees, Syn *Justicia adhatoda* plant which belongs to *Acanthaceae* family.

### **Materials and Apparatus Required**

Vasaka, sharp razor, brush, dropper, needles, watch glass, microscopic slide cover-slips, safranin, glycerine and compound microscope.

### **Theory**

Vasaka is an ayurvedic plant that improves respiratory health. It is also known 'Malabar Nut' in English, "Adhathodai" in Tamil, 'Vasa' in Telugu, and 'Ar' in Hindi. A variety of health problems including breathing difficulties, cough and colds, nasal congestion, sore throat, asthma, bronchitis, and other respiratory tract infections, bleeding disorders, etc. can be treated by this plant. It has multiple curative properties.

## **Morphological Characters**

Caryophyllaceous stomata with sinuous epidermal cells, as well as conering glandular trichomes, are visible in the epidermis. It is a dorsiventral leaf with layers of cells in the palisade. In the midrib, there are 2 to 3 collateral vascular bundles, Calcium oxalate crystals in mesophyll are prismatic and acicular. The stomatal index ranges from 10.8 to 18.2%, and the palisade ratio is between 5 and 8.5%. The xylem, phloem, Lamina, collenchymas, epidermis, Palisade, Spongy Mesophyll, abaxial surface, and Prismatic type of calcium oxalate crystal found in Mesophyll as given in figure 31. The stomatal index, palisade ratio is 5-6, 5-8.5%, and stomatal index 10.8-14.2-18.1% for the lower surface were visible in a transverse section of the leaf.

## **Petiole**

A single layered epidermis of parenchyma cells, interrupted at times by multicellular trichomes up to ten layer hypodermis of parenchymatous cells, ground tissue of round parenchyma cells encircling a large collateral vascular bundle in the centre and two small vascular bundles in each wing below hypodermis and up to ten layer hypodermis of parenchymatous cells.

## **Lamina**

A dorsiventral structure with two layers of palisade cells may be seen in the TS of the lamina. In the surface view, epidermal cells are sinuous with diacytic stomata on both surfaces, with the lower surface having more, ordinary trichomes are few, 1 to 3, rarely to 5 cells, up to 500 cells glandular trichomes with unicellular stalk and 4 celled head.

The surface area of the lamina is 25 to 36 nm diameter. They have elongated cigar shaped cytosol piths in midrib, spongy parenchyma and palisade cells. They also have acicular and prismatic forms of calcium oxalate crystals present in spongy parenchyma cells. The palisade ratio ranges from 5 to 85: stomata Inlet ranges from 10 to 18 for lower surface, vein islets number ranges from 6.5 to 7.5.

## **Procedure**

### **1) Taking Sections:**

- i) The dissected plant should be placed between index finger and thumb. keeping the razor's edge perpendicular to the plant's longitudinal axis. It should be cut down into thin sections
  
- ii) These sections should be shifted into a watch glass with the help of a brush using the edge of blade. The watch glass raust hold water

### **2) Process of Staining:**

- i. 2 to 4 thin transverse section should be picked and shifted to a different
- ii. watch glass which contains safranin stain .

- iii. The seed should be left completely rest in the stain for few minutes.
- iv. After a while, the section of the stain should be removed and rinsed again with water to remove any extra strain.

### **3) Mounting:**

- i) Stained section should be placed in the middle of the clean slide and mount it with water or glycerine.
- ii) The coverslip should be placed slowly using a needie.
- iii) Blotting paper can be used to remove excess water or glycerine from the edge of the coverslip.
- iv) It should be confirmed that no air bubbles emerge during the mounting process.

### **4) Precautionary Measures:**

- i) Enough water should be available to both the blade and the substance during dissecting the segment.
- ii) A brush should be used during working with sections.
- iii) The coverslip should be gently placed to prevent air bubbles.
- iv) Excess glycerine can be removed with filter paper

### **Result :**

The gross anatomical study of Vasaka was performed and determined.