

Experiment No.9:

Aim: To study the anatomical details of dorsiventral leaf through permanent slides/temporary stain mounts

Material required: Sharp razor, brush, dropper, needles, watch glass, microscopic slides, coverslips, safranin, glycerine and compound microscope.

Technique:

- Take 2-3cm long pieces of the material.
- Hold the material between thumb and first finger of your left hand.
- Hold the razor in the right hand with edge of the blade facing you and handle at right angle to it.
- Dip the top of the material in water.
- Then start cutting transverse sections as fast as possible in a watch glass containing water.
- Select the thinnest section of the material with the help of a delicate brush.
- Take a clean watch glass with water, transfer thin sections of the material.
- Put a few drops of safranin stain in the watch glass with water.
- Leave it for 3-5 minutes.
- Drain off stain and wash with water if necessary.
- Put the thinnest section in the centre of the slide.
- Put a drop of glycerine over the material.
- Cover it with a coverslip with the help of needle.
- Observe it under a compound microscope after staining and mounting.

Study under the microscope: Focus the slide under lower of microscope and then change to high power if needed

Precautions:

3. Safranin is to be used to stain only the lignified tissues, over staining can be removed by washing in water.
4. Air bubbles must be avoided in the sections.
5. Use only brush to transfer or to handle the sections. Do not use needles for this purpose.
6. Discard the incomplete and oblique sections.

Identifying Characters:

- Internally the leaf is differentiated into upper and lower epidermis and mesophyll, which lies in between the two epidermises.
- The distribution of stomata is usually restricted to lower epidermis.
- Mesophyll is composed, of palisade and spongy parenchyma. The palisade cells are elongated and situated in transverse plane towards the upper epidermis. The spongy parenchyma cells are more or less isodiametric in shape and occur in between the palisade and lower epidermis with profuse intercellular spaces.
- The vascular bundles, in the transverse section of leaf, are of different sizes and not arranged in a transverse line. Ex. dicotyledonous leaf.
- The vascular bundles are usually surrounded by bundle sheath consisting of a single layer of parenchyma.

Inference: The given specimen is the section of dorsiventral leaf (Dicot leaf).

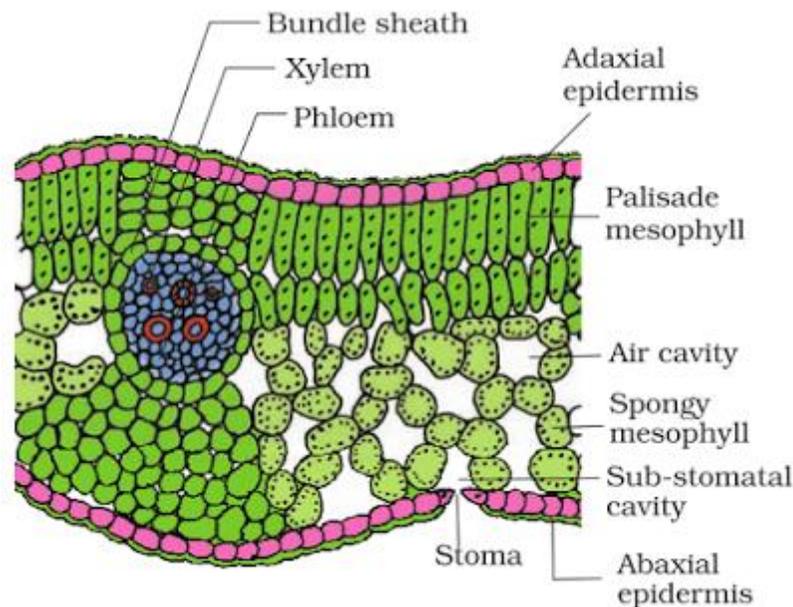


Fig. 1. Transverse section of dorsiventral leaf (Dicot leaf)