

Experiment No.12:

Aim: To study of anatomical details of hydrophytic leaf (Nymphaea leaf)

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:

- Cuticle is completely absent in submerged parts of the plants.
- Cuticle may be present as a thin film on surface of parts exposed to atmosphere.
- Epidermal cells are with chloroplast useful for absorption and assimilation.
- Stomata are totally absent in submerged hydrophytes.
- Exchange of gases takes place through diffusion.
- Non-functional stomata are seen in Potamogeton.
- Epistomatous leaves (stomata found only on upper surface) are present in hydrophytes with floating leaves Eg; Nelumbo.
- Mechanical tissues like collenchyma and sclerenchyma are more or less absent
- Xylem is poorly developed in Hydrophytes as the water absorption takes place all over surface of the plant body
- Hydrophytes have aerenchyma in all parts of the plants. Aerenchyma provides buoyancy to the hydrophytes.

Inference: The given specimen is the section of hydrophytic leaves

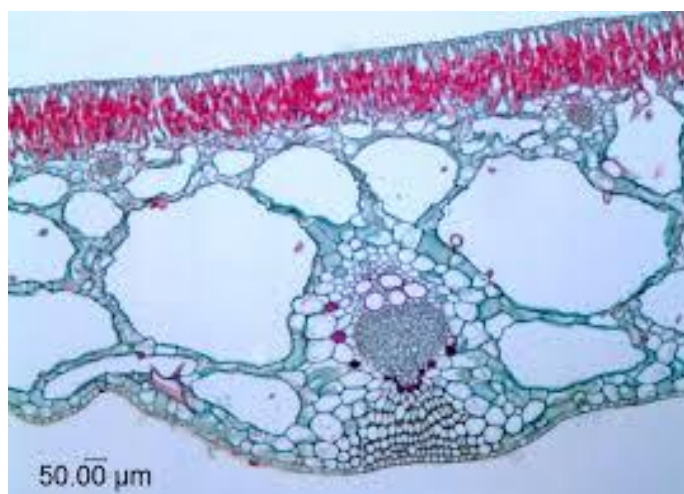


Fig. 1. Transverse section of Nymphaea leaves