

ACTIVITY 16

INVESTIGATION OF STOMATAL DISTRIBUTION USING EPIDERMAL CELLS

Requirements:

- (i) Microscope
- (ii) Glass slide and cover slip
- (iii) Rhodocolour or Bryophyllum leaf
- (iv) Razor, blade, forceps
- (v) Watch glass petridishes

Theory:

There are two types of leaves in Angiosperms:

- (i) **Dorsoventral** or **Bifacial leaf** contains stomata only in the lower epidermis.
- (ii) **Isobilateral** or **Monofacial leaf** contains stomata both in the upper and lower epidermises.

Procedure:

- (i) Strip a small piece of epidermis from lower surface of **Rhodocolour** leaf, mount it on a slide and observe under microscope.
- (ii) Count the number of stomata in the lower epidermis in ten places to find out the average of stomata.
- (iii) Calculate the number of stomata in per **square cm** of leaf surface.
- (iv) Trace the leaf on a paper and determine its area.
- (v) Calculate the number of stomata in the lower epidermis of leaf.

Calculation:

$$\text{Number of stomata/cm} = \frac{\text{Number of stomata}}{\text{Total area of leaf under observation in cm}}$$

$$\text{Number of stomata in the lower epidermis} = \frac{\text{Number of stomata}}{\text{Cm}^2 \times \text{total area in cm}^2}$$

Repeat the same process in the upper epidermis.

Conclusion:

- (i) More number of stomata in lower epidermis.
- (ii) The stomata are not equally distributed on all parts of leaf surface.
- (iii) The area occupied by stomata in leaf =