6. Preparation of temporary mounts

Temporary preparation of materials for light microscopy can be made for quick preliminary investigation. This may involve sectioning, staining and mounting. Fresh material may be hand-sectioned with a razor blade. A number of stains may be used for staining purpose, and some examples are shown below:

<table>
<thead>
<tr>
<th>Stain</th>
<th>Suitable for</th>
<th>Final colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>eosin</td>
<td>cytoplasm</td>
<td>pink</td>
</tr>
<tr>
<td></td>
<td>cellulose</td>
<td>red</td>
</tr>
<tr>
<td>iodine</td>
<td>cuticle, xylem elements,</td>
<td>yellow/straw</td>
</tr>
<tr>
<td></td>
<td>sclerenchymatous cells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>starch</td>
<td>blue-black</td>
</tr>
<tr>
<td>Leishman’s stain*</td>
<td>blood cells</td>
<td>red-pink</td>
</tr>
<tr>
<td></td>
<td>nuclei of white blood cells</td>
<td>blue</td>
</tr>
<tr>
<td>methylene blue</td>
<td>nuclei</td>
<td>blue</td>
</tr>
<tr>
<td>phloroglucinol</td>
<td>lignin</td>
<td>red</td>
</tr>
<tr>
<td>+ conc. HCl*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>safranine</td>
<td>nuclei, lignin</td>
<td>red</td>
</tr>
<tr>
<td>Schultze’s solution</td>
<td>cellulose</td>
<td>blue or violet</td>
</tr>
<tr>
<td></td>
<td>lignin, cutin</td>
<td>yellow</td>
</tr>
<tr>
<td></td>
<td>starch</td>
<td>blue</td>
</tr>
</tbody>
</table>

* Special staining procedure is required for these types of stains.
- The sections are placed in a watch glass containing stain and left there until they are stained to the required depth. Sections can also be placed directly on a drop of stain on a slide.
- Irrigation can also be used to introduce stain into the sections. A drop of the stain is placed on the slide so that it just touches the edge of the cover slip. Fluid is then withdrawn from the opposite side of the cover slip by means of a piece of filter paper or blotting paper. The stain then flows in to replace the fluid taken out.
- The sections should be mounted in a drop of water/stain/saline solution/glycerine on a clean slide and a cover slip applied.

A. **Plant leaves (e.g. *Rhoeo discolor*)**

*Procedure*
1. Insert a piece of leaf into a vertical slit made down the centre of a piece of moistened carrot.
2. Hold the carrot piece in one hand, cut the sections rapidly and smoothly with a sharp razor blade held in the other hand.
3. Place the sections in a dish of water.
4. Select one or two thin sections, including at least one that is cut through the midrib, and mount them in water on a slide.
5. Place a cover slip over the slide. Examine the slide under the microscope.

B. **Stem (e.g. *Hydrilla, Coleus, Wedelia* or *Helianthus*)**

*Procedure*
1. Soak a stem segment in water.
2. Cut thin transverse sections with a razor blade: hold the piece of stem in one hand and the
Practical work

1. Blade in the other, cut smoothly and rapidly, and constantly wet the blade and surface of the stem with water.
2. Transfer the stem sections into a dish of water.
3. Select one or two thin sections for staining (e.g. using safranine) and then mount in dilute glycerine.
4. Place a cover slip over the slide. Examine the slide under the microscope.

C.叶表皮（如Zebrina, Rhoeo discolor or onion）

Procedure
1. Tear a leaf (e.g. Zebrina) diagonally and use a pair of forceps to strip away a small piece from the torn end of the lower epidermis.
2. Mount the epidermis on a slide with a drop of water.
3. Place a cover slip over the slide. Examine the slide under the microscope.

An alternative method

Procedure
1. Place a small drop of colourless nail varnish on a slide.
2. Place a leaf on the drop. Hold flat until the nail varnish dries.
3. Remove the leaf from the slide. A negative replica will be obtained on the slide.
4. Examine the replica under the microscope.

Fig.1 Nail varnish
Note

1. This method is suitable for observing the distribution of stomata of leaves (e.g. Coleus) whose epidermis is difficult to peel off.

D. Animal epithelial cells (e.g. Ox corneal cells)

Procedure

1. Gently touch the surface of the cornea of a fresh ox eye or of an ox eye (fresh or refrigerated) with a clear slide.
2. Add a drop of methylene blue stain on the slide.
3. Place a cover slip over the slide. Examine the slide under the microscope.

Note

1. Large squamous epithelial cells with prominent nuclei can be easily observed.