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

## Pharmacognosy

### Experiment

To perform the gross anatomical study (transverse section) of Liquorice.

#### **Aim:**

To perform the gross anatomical study (transverse section) of Liquorice.

#### **Reference :**

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 89 - 92

#### **Biological Source :**

Liquorice is a subterranean peeled and unpeeled stolons, roots, and subterranean stems of Glycyrrhiza Linn and other Glycyrrhiza species which belongs to the Leguminosae family.

#### **Materials and Apparatus Required**

Liquorice, sharp razor, brush, dropper, needles, watch glass, microscopic slides, cover-slips, glycerine, and compound microscope.

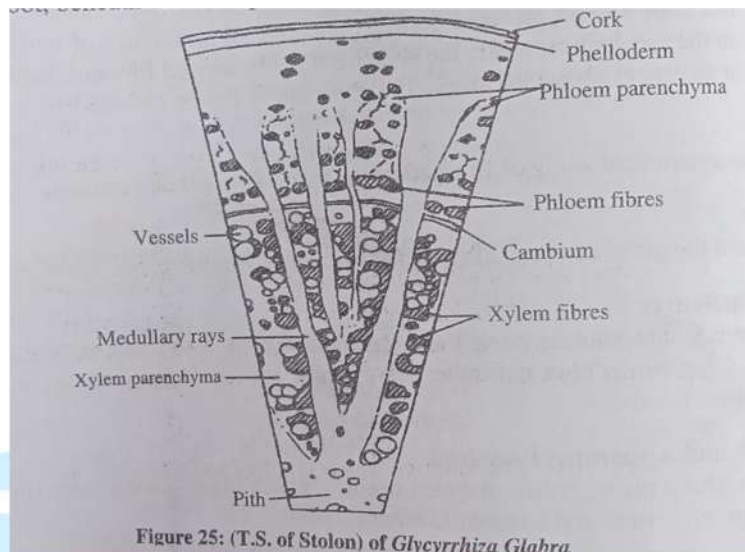
#### **Theory**

Liquorice is a perennial herb cultivated in the Mediterranean region and Central and South-West Asia for its sweet taproot (thus, also termed sweet root). The plant gives purple with white coloured flowers and its roots grow to a depth of 4 feet (1.2m).

## Morphological Characters

When examined under microscope, stolon of liquorice shows the following characteristics:

- 1) **Outer Surface:** The outer surface of the unpeeled drug consists of around 10 rows of narrow cork cells.
- 2) **Cork Cells:** These are rapidly arranged and thin-walled, polygonal in nature, beneath which there may be a few parenchyma rows forming the cortex.
- 3) **Parenchymatous Pericycle:** It has small groups of fibres at intervals
- 4) **Phloem Fibres:** These are thick-walled, lignified occur in cylindrical bundles altering with sieve tissue, which in the outer part is collapsed to form ceratenchyma. Sieve tubes are clear near the cambium.
- 5) **Xylem:** It consists of strongly lignified xylem fibres and vessels with little xylem parenchyma. The xylem vessel walls are thickly covered with bordered pits having slit like openings.
- 6) **Medullary Rays:** These are composed of cellulosic parenchyma having rectangular and radially elongated cells. Many parenchymatous celis, occurring in long longitudinal rows adjacent to the fibres of phloem and xylem, are small in size and contain a solitary prism of calcium oxalate All the parenchyma cells contain either calcium oxalate crystals or starch.
- 7) **Pith:** It is parenchymatous. The microscopical characters of roots are similar to stolon, except that at the centre small four primary xylem bundies are present at right angles to each other, with protoxylem directed outwards. In root, beneath the cork, phelloderm may be present.



## Procedure

- 1) The area where practical is to be performed should be cleaned and the apparatus should be provided.
- 2) The sample of crude drugs should be provided.
- 3) The sample should be prepared for sectioning
  - i) The sample should be boiled.
  - ii) The section should be cut down.
  - iii) The section should be transferred into the watch glass containing water. If the crude drug is too difficult, or in any circumstance where the subject teacher feels it is necessary, the sample for sectioning is prepared one hour or a day before the practical, or may be altered in some cases.)

### 4) Staining Process:

- i) A clean watch glass should be taken and staining solution should be added to it.
- ii) The section which has been taken from watch glass containing water to stain the solution should be transferred with the help of brush and should be kept for 2-3 minutes.
- iii) Then the solution should be transferred to the watch glass containing plain water so that excess stain is washed away. This section which is to be mounted is ready

## 5) Mounting Process:

- i) The section which is to be mounted on the glass slide should be transferred with the help of brush
- ii) 1-2 drops of water should be added on the section with the help of stopper .
- iii) The clean cover slip should be placed over the section with the help of forceps and needle.
- iv) Excess water present outside the coverslip should be removed with the help of blotting paper The slide is now ready to be examined

## 6) Observation:

- i) Choose a location in the laboratory for the microscope that has enough light. The microscope should be arranged so that the C-Arm is facing towards the viewer and the objective and mirror are towards the light.
- ii) The diaphragm should be opened completely using sub-stage mirror. The position should be adjusted so that the entire field of view is well illuminated.
- iii) The prepared slide should be placed on the stage of the microscope's centre with the section aligned with the stage window above the condenser.
- iv) The slide should be fixed between the clips. With the use of two screws on the mechanical stage, the slide can now be moved forward, backward. or sideways above the stage. The observation should be noted

## Result :

The gross anatomical study of Liquorice was performed and determined.

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