First Hope

COMPLETE NOTES

Click here to visit our website

PHARMACY PRACTICAL NOTES

Complete subject and semesters are available on FirstHope app only.

Scan or click here

Click here to get the app >

Available on Google Play

JOIN THE FIRSTHOPE COMMUNITY

Join our Telegram channel

Click here to join Telegram >

Scan or click here

@FirstHopeNotes

Instagram

@firsthope.official

Click here to follow >

YouTube channel

FirstHope-Pharmacy / Live streams

Click here to watch >

WhatsApp channel

Follow FirstHope on WhatsApp

Click here to join >

FirstHope website

firsthope.co.in

Click here to visit >

B.Pharm / D.Pharm / M.Pharm / Pharm.D

Complete subjects and semesters are available in the FirstHope app.

Transverse Section and Powder Microscopy of Liquorice Root

Experiment 9 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To examine a transverse section and powder of liquorice root and record diagnostic features.

Principle

Authentication combines the arrangement of tissues in a section with diagnostic fragments in powder. Glycyrrhiza glabra belongs to Fabaceae. Material age, organ and processing can change the appearance; the complete pattern is more useful than one isolated cell.

Section Features

- Cork in unpeeled material; broad secondary phloem and xylem regions with radial rays.
- Phloem/xylem fibres, pitted vessels, starch-bearing parenchyma and prismatic crystals near fibre bundles.
- True roots lack a distinct central pith; rhizome/stolon material may have a pith.

Powder Features

- Pitted/reticulate vessel fragments and fibres with associated crystal-bearing cells.
- Starch grains and parenchyma.
- Cork fragments when the original material is unpeeled.

Requirements

- Authenticated liquorice root, labelled comparison slides and the prescribed microscope.
- Fresh razor used with a holder, slides, coverslips, water/glycerol mountant and instructor-prepared stains.

Procedure

1. Prepare a section

Use the instructor's safe cutting method to obtain a thin transverse section through the assigned organ. Transfer to water and select an intact section.

2. Mount

Mount in the assigned water/glycerol medium without folds or air bubbles. If staining is required, use the prepared reagent and prescribed rinse.

3. Low-power map

Observe the outline and tissue arrangement at low power. Draw the complete section with orientation and a clear title.

4. Diagnostic structures

Move to higher power to label the structures listed below. Record objective magnification; use stage calibration for any dimensions.

5. Powder study

Mount a small amount of powder without a dense opaque layer. Scan several fields and draw at least three characteristic fragments.

6. Compare and conclude

Compare the section and powder with authenticated slides. Distinguish a root from rhizome/stolon material before interpreting the presence of a pith. Record what was actually visible rather than copying every expected feature.

Observations and Record

Record	Entry
Botanical name / family / part	Glycyrrhiza glabra / Fabaceae / liquorice root
Section, objective and stain	_____
Three powder fragments and magnification	_____
Diagnostic agreement / limitations	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Magnification alone does not give a fragment length. If calibration is 4 µm per eyepiece division and a fragment spans 12 divisions, its length is 48 µm.

Result

State whether the observed section and powder support the stated botanical material, naming the features seen and any unresolved difference.

Precautions

- Use authenticated, labelled teaching material and instructor-prepared reagents. Wear the protection specified for the chemical method.
- Compare with a known control and record actual observations. A single colour, precipitate or odour description cannot authenticate a crude drug.
- Do not taste botanical material or directly inhale vapours; dispose of solvents and staining reagents in their assigned waste containers.
- Use teacher-prepared staining/clearing reagents. Do not make chloral-hydrate or corrosive staining mixtures independently.

Viva Questions and Answers

1. Why study both section and powder?

The section preserves tissue arrangement, while powder reveals fragments retained after grinding.

2. Why examine several fields?

A single field may miss a diagnostic feature or overrepresent a contaminant.

3. How should an uncertain feature be recorded?

Describe it as uncertain and request comparison; do not force an identification.

First Hope

COMPLETE NOTES

Click here to visit our website

PHARMACY PRACTICAL NOTES

Complete subject and semesters are available on FirstHope app only.

Scan or click here

Click here to get the app >

Available on Google Play

JOIN THE FIRSTHOPE COMMUNITY

Join our Telegram channel

Click here to join Telegram >

Scan or click here

@FirstHopeNotes

Instagram

@firsthope.official

Click here to follow >

YouTube channel

FirstHope-Pharmacy / Live streams

Click here to watch >

WhatsApp channel

Follow FirstHope on WhatsApp

Click here to join >

FirstHope website

firsthope.co.in

Click here to visit >

B.Pharm / D.Pharm / M.Pharm / Pharm.D

Complete subjects and semesters are available in the FirstHope app.