

Transverse Section Microscopy of Ashwagandha

Experiment 22 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned ashwagandha root and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A mature root shows cork, secondary phloem, a cambial region, secondary xylem and broad parenchymatous rays. Starch is prominent in storage tissue.

Identity and Drawing Guide

Field	Guide
Botanical source	Withania somnifera
Family	Solanaceae
Part	Root
Labels to include	Label cork, phloem, cambial region, vessels, xylem parenchyma, rays and starch grains.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Starch-rich storage tissue with the assigned root anatomy supports identification.

Pharmacognosy

5. Draw and label

Label cork, phloem, cambial region, vessels, xylem parenchyma, rays and starch grains.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Root age changes the extent of secondary growth.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Starch-rich storage tissue with the assigned root anatomy supports identification.

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