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Tulsi and Ashwagandha Powder Study

Experiment 2 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To compare the supplied authenticated drugs by organoleptic observation and powder microscopy.

Principle

Organoleptic observation and microscopic structures provide complementary identity evidence. Powdering destroys much gross form, but fragments of epidermis, vessels, fibres, starch and other diagnostic structures may remain. Features depend on the actual plant part, processing and preparation; confirm identity from a pattern, not a single cell.

Identity and Material

Drug	Botanical identity / family	Part examined
Tulsi	<i>Ocimum tenuiflorum</i> / Lamiaceae	Leaf; record if whole plant is supplied
Ashwagandha	<i>Withania somnifera</i> / Solanaceae	Root

Requirements

- Authenticated Tulsi leaves and Ashwagandha roots and matched teaching powders.
- Microscope, slides, coverslips and instructor-approved mounting and staining materials.
- Hand lens, labelled observation record and sketch materials.

Procedure

1. Inspect and label

Confirm the botanical labels and plant parts. Record colour, surface and texture. Assess odour only by the laboratory-approved method; do not taste material.

2. Prepare a mount

Use a small dispersed powder portion in the prescribed mount. Prepare an untreated or specifically stained mount as directed; do not combine arbitrary clearing reagents.

3. Survey

Find representative fragments at low power, then examine diagnostic features at a suitable higher power.

4. Compare

Locate more than one feature from the guide, compare with the authenticated teaching material and note absent or obscured features.

5. Record

Draw labelled structures, state magnification and write a comparison. Distinguish observed structures from expected textbook features.

Introduction to Pharmacognosy

Organoleptic and Powder Features

Drug	Macroscopic / organoleptic cues	Powder features to examine
Tulsi	Green to brown-green leaf material; characteristic aromatic odour	Epidermal fragments with stomata; covering and glandular hairs; vessel fragments
Ashwagandha	Pale brown root exterior and lighter interior; wrinkled surface	Starch-containing parenchyma, cork fragments and vessel elements

Comparison

Tulsi leaf material is recognised by a leaf-epidermal and hair pattern, whereas Ashwagandha root shows a storage-tissue and vascular pattern. A root powder should not be identified from leaf characters.

Observations and Record

Drug / mount	Observed structures	Magnification
Drug 1	_____	___ x
Drug 2	_____	___ x

Worked Example

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

- A 10x eyepiece and 40x objective provide 400x visual magnification.
- If a feature is found in only one field, inspect additional representative fields before calling it consistently present. This is an identity observation, not a numerical purity assay.

Result

Drug 1 showed ___ and ___. Drug 2 showed ___ and ___. The observed pattern was compared with authenticated teaching material.

Precautions

- Use authenticated material and record the organ; whole-plant powder can differ from leaf-only powder.
- Do not mistake air bubbles for oil globules or a processing artefact for a diagnostic cell.
- Starch appearance can change during heating and processing.

Viva Questions and Answers

1. Why use more than one feature?

A common structure such as starch may occur in many drugs.

2. Why record processing?

Drying, boiling and powdering may alter diagnostic appearance.

3. What should the result state?

The observed features and consistency with the authenticated drug, with any limitations.

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