

Morphology, Histology and Phytochemical Study of Ephedra

Practical 05 | Pharmacognosy and Phytochemistry II

Aim

To study Morphology, Histology and Phytochemical Study of Ephedra, and interpret the recorded observations.

Principle

- Jointed stems are compared with authenticated teaching material for nodes, reduced leaves and prepared tissue features. Ephedrine-family alkaloids are a characteristic chemical group.
- Crude-drug identity is established through a combination of macroscopic, microscopic and chemical characteristics.
- A chemical class test is supportive and does not alone distinguish all adulterants or substitute materials.
- Extraction study: compare the plant part, target constituent class and solvent-selection rationale in the prepared demonstration.
- Detection study: record the method, comparison/control and observed result. A class reaction alone does not prove the identity of every constituent.

Materials and Apparatus

- Authenticated ephedra specimen, prepared sections/powder mounts and instructor-prepared extract or completed detection records.
- Authenticated drug material, a prepared comparison specimen or atlas, and assigned test reagents.
- Hand lens, microscope with prepared sections or powder mounts, glassware and a record sheet.

Method

1. Record the drug name, plant part or material type and the condition of the provided specimen.
2. Examine the macroscopic characters without tasting the material.
3. Study assigned prepared sections or powder mounts and sketch distinguishing structures.
4. Observe the assigned class test with the necessary positive or reagent comparison.
5. Combine the visible, microscopic and chemical evidence rather than relying on one feature.
6. Write a reasoned identification statement and document differences from the authenticated comparison.

Observation Record

Complete this record using actual laboratory findings or the provided teaching data.

Observation / parameter	Record / finding
Jointed stem/nodes	_____
Reduced leaves	_____
Prepared section	_____
Alkaloid evidence	_____

Calculations and Interpretation

- Qualitative identity exercises usually require a structured comparison rather than a numerical calculation.

Result

Record the actual finding, calculated value with units where relevant, and a conclusion supported by the observations.

Finding: _____

Conclusion: _____

Precautions

- Use an authenticated comparison and retain the specimen identity.
- Do not taste crude drugs or infer a clinical dose from an identification test.
- Distinguish a characteristic finding from a feature that can vary with processing or age.

Viva Questions

1. Why combine several identification features?

One character may be shared by unrelated materials or altered by processing.

2. Does a class test establish drug purity?

No. It indicates a chemical group and must be combined with other evidence.

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