

Determination of Starch-Grain and Calcium-Oxalate Crystal Size

Practical 10 | Pharmacognosy and Phytochemistry I

Aim

To determine Starch-Grain and Calcium-Oxalate Crystal Size, and interpret the recorded observations.

Principle

- An ocular scale has no fixed length until calibrated against a stage micrometer for the selected objective.
- The property is obtained from a defined observable under controlled conditions.
- Replicate measurements, instrument checks and consistent units are needed before comparison.

Materials and Apparatus

- Prepared starch/crystal mounts and stage/ocular micrometers.
- Assigned test material and calibration or comparison material.
- The apparatus specified for this property, a balance or volumetric equipment where relevant, and a record sheet.

Method

1. Calibrate the ocular micrometer for the chosen objective.
2. Identify the prepared starch grains and crystals using the assigned comparison material.
3. Record the specific dimension and ocular divisions for each object.
4. Convert readings to micrometres using that objective's calibration.
5. Repeat across representative objects rather than choosing only extremes.
6. Present mean/range and state the object type and measured dimension.

Observation Record

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

Observation / parameter	Record / finding
Objective	_____
Calibration	_____
Object dimension in divisions	_____
Calculated micrometres	_____

Calculations and Interpretation

- Calibration = known stage-micrometer length/corresponding ocular divisions.
- Object size = ocular divisions × calibration.

Result

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

Finding: _____

Conclusion: _____

Precautions

- Keep temperature and test conditions consistent across comparative readings.
- Record raw readings before rounding calculated values.
- Do not compare results obtained with different methods as if they were interchangeable.

Viva Questions

1. Why control the test conditions?

A change in conditions may alter the measured property independently of the intended variable.

2. Why retain replicate readings?

They show repeatability and help identify an anomalous measurement.

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