

Determination of Sedimentation Volume at Different Agent Concentrations

Practical 07 | Physical Pharmaceutics II

Aim

To determine Sedimentation Volume at Different Agent Concentrations, and interpret the recorded observations.

Principle

- Changing the concentration of one suspending agent can alter viscosity, particle settling and sediment structure.
- 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

- Same drug dispersion and graded concentrations of one assigned suspending agent.
- 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. Prepare or identify the comparable assigned suspensions and record their initial volume.
2. Document the suspending-agent identity and concentration for every container.
3. Record sediment volume at the specified observation times without disturbing the sediment prematurely.
4. Assess redispersion by the assigned procedure and record it separately.
5. Calculate the volume ratio and compare at the same time point.
6. Discuss settling, sediment structure and redispersion together.

Observation Record

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

Observation / parameter	Record / finding
Agent concentration	_____
Time	_____
V ₀	_____
V _u	_____
Redispersion observations	_____

Calculations and Interpretation

- $F = V_u/V_0$.
- Plot F against the agent concentration at the same observation time.

Worked Illustration

Illustration: 18.0 mL final sediment in a suspension initially occupying 30.0 mL gives $F = 0.60$. Redispersion still needs separate observation.

The values in this illustration are for calculation practice.

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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