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Moisture Content of Crude Drugs

Experiment 6 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To determine loss on drying of a crude drug and distinguish mass loss from a water-specific measurement.

Principle

Loss on drying measures the decrease in mass under defined conditions. It may include volatile constituents as well as water. A water-specific method such as an appropriate distillation or validated titration is different; the method must suit the drug and its monograph.

Requirements

- Representative drug portion at prescribed particle size.
- Balance, tared drying dish, prescribed oven or drying system and desiccator.

Procedure

1. Prepare the dish

Dry and weigh the dish as prescribed; record tare mass m_0 .

2. Weigh the portion

Add the assigned representative portion and record dish plus material before drying, m_1 . Spread appropriately for the specified method.

3. Dry

Use the temperature and time from the drug's prescribed method. A common classroom oven example is 105°C, but it is not suitable for every volatile or heat-sensitive drug.

4. Cool and reweigh

Cool in a desiccator and weigh, m_2 . Repeat the prescribed drying and weighing sequence until the stated constant-mass criterion is met.

5. Calculate

Use $100 \times (m_1 - m_2) \div (m_1 - m_0)$. Record conditions, replicates and the basis of the reported result.

Introduction to Pharmacognosy

Observations and Record

Measurement	Symbol	Mass
Empty dish	m0	___ g
Dish + material before drying	m1	___ g
Dish + material after drying	m2	___ g

Worked Example

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

- Illustrative masses: m0 = 28.000 g; m1 = 30.000 g; m2 = 29.840 g. Test portion = 2.000 g; loss = 0.160 g.
- Loss on drying = $0.160 \div 2.000 \times 100 = 8.0\%$.
- Report "8.0% loss on drying under the stated conditions", not automatically "8.0% water", when other volatile material may be lost.

Result

Loss on drying = ___% using ___ conditions. Replicate values and the prescribed specification are recorded.

Precautions

- Weigh only after cooling under the prescribed conditions.
- Avoid scorching or decomposition; mass loss then no longer represents the intended test.
- Use the stated constant-mass criterion rather than an invented universal tolerance.

Viva Questions and Answers

1. Why use a desiccator?

It helps limit moisture uptake during cooling.

2. Is loss on drying always water content?

No; volatile compounds may also be lost.

3. Why record particle size?

It can influence drying rate and the reproducibility of the method.

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