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Simple Syrup

Experiment 5 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To prepare a sucrose syrup by the prescribed method and distinguish percentage by mass from percentage by volume.

Principle

Syrup is a concentrated aqueous solution of sucrose. Concentration affects viscosity, crystallisation and susceptibility to microbial growth. A 66.7% w/w teaching syrup means 66.7 g sucrose in 100 g of final syrup, not in 100 mL.

Requirements

- Sucrose, purified water and prescribed IP formula.
- Balance, beaker, stirring rod, controlled water bath and suitable clean bottle.

Procedure

1. Weigh ingredients

Use the final-mass basis in the assigned formula. Weigh the sucrose and an initial water quantity accurately.

2. Dissolve

Stir with gentle controlled warming if the prescribed method allows heating. Avoid prolonged boiling and scorching.

3. Cool and adjust

Cool to the measuring temperature. Replace evaporative loss by adjustment to the prescribed final mass, not by an estimated splash of water.

4. Inspect

Check for undissolved sugar, crystals, clarity and uniformity. Record the mass obtained and temperature when measured.

5. Package

Transfer to a tightly closed clean bottle. Label the preparation, batch and laboratory-specified storage and use period.

Observations and Record

Item	Teaching quantity for 100 g	Record
Sucrose	66.7 g	_____
Purified water	q.s. to 100 g final mass	_____
Appearance / final mass	Clear, uniform syrup / weighed mass	_____

Worked Example

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

- For a 30 g batch at 66.7% w/w: sucrose = 30 × 0.667 = 20.01 g. Water is adjusted so the final mass is 30 g.
- If the final mass before adjustment is 29.20 g, add water to obtain 30.00 g; required addition is 0.80 g.
- Do not convert this formula into % w/v without knowing the density. The prescribed IP edition remains the basis for official composition.

Result

Record the observed outcome and calculated value, with units. State whether the stated laboratory specification was met; do not copy the worked example as your result.

Precautions

- Avoid prolonged heat, which can cause sucrose inversion and colour changes.
- Do not assume concentrated syrup is sterile or indefinitely stable.
- Keep closures and utensils clean; dilution changes preservation behaviour.

Viva Questions and Answers

1. Why adjust after cooling?

Heating may evaporate water; final adjustment restores the intended mass concentration.

2. Why can crystals form?

Loss of water or an unsuitable concentration or temperature can produce supersaturation.

3. How does w/w differ from w/v?

w/w uses final preparation mass; w/v uses final preparation volume.

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