Preparation of Aqueous Iodine Solution

Experiment 4 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To prepare an aqueous iodine-potassium iodide solution and explain why iodine dissolves more readily in the presence of iodide.

Principle

Iodide forms soluble polyiodide species with iodine: I2 + I− □ I3−. Dissolving potassium iodide first therefore helps incorporate iodine into water. The preparation is brown and must not be confused with tincture of iodine, which uses an alcoholic system.

Requirements

- Iodine, potassium iodide, purified water and the prescribed BPC formula.
- Balance, glass mortar or beaker, measuring cylinder and amber glass bottle.

Procedure

1. Calculate quantities

Check the assigned formula and final-volume basis. For the strong 5% iodine / 10% potassium iodide teaching composition below, calculate quantities for the batch.

2. Dissolve iodide

Dissolve potassium iodide in a small portion of purified water. Retain enough vehicle for final adjustment.

3. Incorporate iodine

Add iodine gradually and mix until dissolved. Use the prescribed ventilation and avoid unnecessary warming that could increase iodine loss.

4. Adjust and mix

Transfer quantitatively, rinse the working vessel with vehicle and make up to final volume. Mix thoroughly.

5. Evaluate and label

Observe the deep-brown solution for visible particles. Package in a tightly closed light-resistant container. Apply route and use instructions from the assigned formulation; iodine preparations are not interchangeable.

Observations and Record

Ingredient	Teaching quantity for 100 mL	Quantity for assigned batch
Iodine	5 g	_____
Potassium iodide	10 g	_____
Purified water	q.s. to 100 mL	_____

Worked Example

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

- For 20 mL of the stated teaching composition: iodine = 5 × 20/100 = 1 g; potassium iodide = 10 × 20/100 = 2 g; water q.s. to 20 mL.
- Iodine concentration = 1 g ÷ 20 mL × 100 = 5% w/v.
- This commonly used strong composition explains the method. Use the college-prescribed BPC formulation if its specified strength differs.

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

- Do not add 100 mL water to the solids when the formula says q.s. to 100 mL.
- Keep the container closed to limit iodine loss and protect from light.
- Avoid skin contact and do not use the teaching preparation clinically.

Viva Questions and Answers

1. Why dissolve potassium iodide before iodine?

Iodide promotes the formation of more soluble iodine complexes.

2. Why use an amber bottle?

It limits light exposure; tight closure also limits loss of volatile iodine.

3. Is Lugols solution an alcoholic tincture?

No; it is an aqueous iodine-iodide preparation.

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