

Aim: Preparation of Compound Syrup of Ferrous Phosphate (BPC '68)

References

1. British Pharmacopoeia Codex 1968.
2. Aulton, M. E. *Pharmaceutics: The Design and Manufacture of Medicines*.
3. Allen, L. V., Popovich, N. G., & Ansel, H. C. *Pharmaceutical Dosage Forms and Drug Delivery Systems*.

Objective

To prepare Compound Syrup of Ferrous Phosphate as per British Pharmacopoeia Codex 1968 (BPC '68) standards and evaluate its characteristics and quality control parameters.

Introduction

Compound Syrup of Ferrous Phosphate is an iron supplement that delivers ferrous phosphate in a palatable syrup formulation. It is used to prevent and treat iron deficiency anemia and contains a combination of ferrous phosphate and other adjuvants to enhance stability and efficacy.

Principle

The preparation involves the dissolution of ferrous phosphate in a suitable acid medium to enhance solubility, followed by the incorporation of excipients and a syrup base to achieve a stable and palatable formulation.

Materials and Equipment

Chemicals Required:

- **Ferrous Phosphate:** 2.5 g
- **Citric Acid:** 2 g
- **Sucrose:** 600 g
- **Orange Syrup (flavoring agent):** 100 mL
- **Purified Water:** Quantity Sufficient (QS) to 1000 mL

Apparatus Required:

- Beaker (1000 mL)
- Measuring cylinder
- Water bath
- Glass rod
- Funnel
- Muslin cloth or filtration assembly

Procedure

1. Preparation of Ferrous Phosphate Solution:

- Dissolve 2.5 g of ferrous phosphate in 50 mL of purified water.
- Add 2 g of citric acid to the solution. Stir until fully dissolved.

2. Preparation of Sugar Syrup:

- Heat 600 mL of purified water in a beaker to about 60°C on a water bath.
- Gradually add 600 g of sucrose while stirring continuously until completely dissolved.
- Allow the syrup to cool to room temperature.

3. Mixing:

- Add the ferrous phosphate solution to the sugar syrup with continuous stirring.
- Incorporate 100 mL of orange syrup as a flavoring and stabilizing agent.

4. Adjusting Volume:

- Make up the volume to 1000 mL with purified water. Mix thoroughly.

5. Filtration:

- Filter the syrup through muslin cloth or filtration assembly to remove undissolved particles.

6. Storage:

- Transfer the prepared syrup into clean, amber-colored bottles and store in a cool, dry place.

Observation and Results

- **Appearance:** Light orange, clear viscous syrup.
- **Taste:** Sweet with a mild orange flavor.
- **Consistency:** Smooth and free of particulate matter.

Quality Control Tests

1. **Clarity Test:** Check for clarity under a white and black background.
2. **Specific Gravity:** Measure using a specific gravity bottle or hydrometer. It should comply with BPC '68 standards.
3. **pH Test:** Measure the pH using a pH meter. It should range between 4 and 6.
4. **Iron Content Test:** Perform an assay to determine the iron content using titrimetric or spectrophotometric methods.
5. **Microbial Contamination Test:** Ensure the syrup is free from microbial contamination using standard microbiological tests.

Discussion

- **Role of Citric Acid:** Citric acid enhances the solubility of ferrous phosphate and improves stability.
- **Use of Orange Syrup:** It masks the metallic taste of iron and improves patient compliance.
- **Importance of Filtration:** Removes undissolved particles, ensuring a clear syrup.

Applications

- Used to treat iron deficiency anemia.
- Acts as a dietary iron supplement.

Precautions

1. Handle iron salts with care to avoid contamination.
2. Ensure accurate weighing of ingredients to maintain therapeutic efficacy.
3. Store the syrup properly to avoid oxidation and microbial growth.