CHAPTER-18

Experiment: 18

IDENTIFICATION AND TEST FOR PURITY OF PARACETAMOL

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Aim:

To perform and report identification test on the given sample of Paracetamol as per I.P.

Requirements:

A. Glassware & Instruments:

1. Test tube
2. Capillary
3. Thiel's tube
4. Melting point apparatus

B. Chemicals & Reagents:

1. NaOH solution
2. Freshly prepared $FeCl_3$ solution
3. H_2SO_4
4. Alcohol
5. Distilled water (DW)
6. Chloroform
7. Ether

Theory:

Knowledge of acid/base chemistry, redox chemistry, and solubility are required for any process that can provide a qualitative determination of the ions present in a simple inorganic compound. In this regard, it is significantly easier to identify a single pure compound than a mixture. This experiment focuses solely on identifying simple compounds, defined as those containing only one cation and one anion.

Monograph of Aspirin:

Chemical formula: $C_9H_8O_4$

Molecular weight: 180.2

Organoleptic properties: Colourless crystals or white, crystalline powder; odourless or almost odourless.

Physical Properties:

- **Solubility:** Statements of solubility's are indicated by a descriptive terms and are intended to apply at 20°C to 30°C. The following table indicates the meaning of the terms used in statements of approximate solubility's.

Descriptive terms (Statement of approx. solubility)	Approx. volume of solvent in ml per g of solute
Very soluble	Less than 1
Freely soluble	From 1 to 10
Soluble	From 10 to 30
Sparingly soluble	From 30 to 100
Slightly soluble	From 100 to 1000
Very slightly soluble	From 1000 to 10,000
Insoluble/ practically insoluble	More than 10,000

- **Identification test:** These tests ensure that the examined item is consistent with the label on the container. If an article taken from a labelled container fails a prescribed identification test, the article may be mislabeled or substituted. These tests are not necessarily sufficient to establish proof of identity with absolute certainty.
- **Category:** The pharmaceutical category of a drug refers to its medicinal and pharmaceutical uses, such as pharmaceutical aid, analgesic, Antipyretic, and Anti-inflammatory. etc.

Procedure:

Physical Tests:

- **Organoleptic properties:** Observe the given drug critically for the following description. The drug is crystals or crystalline powder, colourless or white, odourless or almost odourless as per I.P.

- **Solubility:** Perform solubility test in the different solvents. The drug is sparingly soluble in water, freely soluble in alcohol, soluble in chloroform and in ether, slightly soluble in water.

Identification Tests:

- **Test 1:** About 0.5 g of the drug is boiled for three minutes with 10 ml of NaOH solution; after cooling, 10 ml of diluted H_2SO_4 is added, producing a white crystalline precipitate with an AcOH odour. A deep violet hue is produced by filtering, dissolving the precipitate in about 2 ml of water, after adding $FeCl_3$ solution.
- **Test 2:** Add 3 ml of 95% alcohol and 3 ml of H_2SO_4 to the filtrate obtained in test A and warm; the odour of ethyl acetate is detectable.
- **Test 3:** Determination of Melting Point: The drug melts at approximately 142 degrees Celsius.

Observation:

Test	Observation	Inference
Physical Tests: a. Nature b. Colour c. Odour		
Solubility: a. Water b. Ethanol c. Chloroform d. Ether		
Identification Test: a. Test 1 b. Test 2 c. Test 3		
*If observation is as specified in the procedure, write "passes the test"; otherwise, write "fails the test."		

Results:

The given sample of Aspirin passes the tests……, and fails the tests……, for Identification as per I.P.

Viva Questions:

- Detail the physical characteristics of sodium chloride.
- What is the effect of storing aspirin in a humid environment?
- Aspirin's chemical name is:
- Write the functional group of aspirin.
- Describe two uses for aspirin.
- What are two brands of aspirin?
- What dosage forms does aspirin come in?
- What is the aspirin dosage?
- Describe the action mechanism of aspirin.
- List two official aspirin formulations.
- List four manufacturers of aspirin as a bulk drug.

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