# Assay of Ibuprofen by Alkalimetry

Experiment 13 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

## Aim

To estimate ibuprofen by neutralising its carboxylic acid group.

## Principle

Ibuprofen is a monoprotic acid. Under the prescribed solvent conditions one mole reacts with one mole hydroxide; a solvent blank may be needed.

## Requirements

- Assigned ibuprofen specimen
- Standardised NaOH, prescribed alcoholic solvent, indicator or specified endpoint system

## Procedure

### 1. Prepare

Weigh accurately and dissolve in the specified neutralised solvent.

### 2. Blank

Perform the prescribed solvent blank using the same volume and endpoint system.

### 3. Titrate

Titrate with standard alkali to the method-defined endpoint.

### 4. Repeat and calculate

Obtain concordant readings and subtract blank where required.

### 5. Report

State the assay on the assigned mass basis and compare with the prescribed specification.

## Observations and Record

| Item | Record |
|---|---|
| Test mass, g | _____ |
| Titrant M / factor | _____ |
| Test / blank titre, mL | _____ |
| Dilution factor | _____ |
| Percentage assay | _____ |

## Worked Example

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

- Mass ibuprofen (mg) = corrected titre (mL) × NaOH M × 206.28 × dilution factor.
- 0.1000 M NaOH corresponds to 20.628 mg ibuprofen/mL.
- Example: 9.70 mL represents 200.09 mg. For a 205.00 mg test portion, the assay is 97.61%.

## 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

- Use the specified solvent; poor dissolution can invalidate the endpoint.
- Keep alcohol away from ignition sources.
- Apply the blank and actual titrant strength.

## Viva Questions and Answers

### 1. What group is titrated?

The carboxylic acid group.

### 2. Why is the mole ratio 1:1?

Ibuprofen has one titratable acidic proton in this assay.

### 3. What is the purpose of the blank?

To correct for solvent or reagent acid-base consumption.

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