

Assay of Ibuprofen

Practical 13 | Medicinal Chemistry I

Aim

To assay Ibuprofen, and interpret the recorded observations.

Principle

- The carboxylic acid group participates in neutralization. The assay must correct for blank/dilution and report the specified analyte basis.
- A standardized titrant reacts with the analyte according to a defined stoichiometric relationship.
- The calculation must distinguish direct titration from a blank-corrected or back-titration procedure.

Materials and Apparatus

- Assigned ibuprofen, standardized alkali and the specified analytical solvent.
- Assigned test material, standardized titrant, specified solvent and indicator or endpoint detector.
- Burette, pipette, volumetric flask, conical flask and analytical balance.

Method

1. Identify the analyte form, the reaction and the endpoint specified for the exercise.
2. Document titrant concentration or factor and prepare a reagent blank where the method requires one.
3. Measure the prescribed test portion and dissolve or treat it by the assigned analytical method.
4. Titrate to the specified endpoint while recording initial and final burette readings.
5. Repeat the determination with independently measured portions and retain all readings.
6. Apply blank, dilution and stoichiometric corrections before reporting the result.

Observation Record

Complete this record using actual laboratory findings or the provided teaching data.

Observation / parameter	Record / finding
Analyte form	_____
Test mass	_____
Blank reading	_____
Test reading	_____
Method factor	_____
Assay percentage	_____

Calculations and Interpretation

- Method-corrected analyte mass = corrected titrant volume × verified analyte factor × dilution correction.
- Assay (%) = method-corrected analyte mass/test-portion mass × 100.
- Use the exact salt/hydrate and reaction factor assigned to this assay.

Result

Record the actual finding, calculated value with units where relevant, and a conclusion supported by the observations.

Finding: _____

Conclusion: _____

Precautions

- Condition volumetric apparatus and avoid burette-tip air bubbles.
- Use the endpoint and solvent assigned to the analyte; do not transfer a factor from another salt or hydrate.
- Keep direct and back-titration signs consistent and report concordance.

Viva Questions

1. Why standardize a titrant?

Its actual concentration may differ from its nominal preparation concentration.

2. Why perform a reagent blank?

It measures reagent or solvent consumption unrelated to the analyte.

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