

Bioavailability from Urinary Excretion

Experiment 8 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To analyse the assigned bioavailability from urinary excretion experiment or teaching dataset.

Principle

Cumulative unchanged drug recovered in urine can compare availability only when collection is adequate and the fraction excreted unchanged is comparable under the stated assumptions.

Requirements

- Institution-assigned experimental method and coded in-vitro or supplied pharmacokinetic data.
- Calibrated analytical readings or supplied concentration table, calculator and plotting tools.

Procedure

1. Read collection data

Record interval times, volumes, unchanged-drug concentrations and missing collections.

2. Calculate amount

Multiply each interval concentration by its volume and sum recovered unchanged drug.

3. Normalise

Compare dose-normalised recovery with the specified comparator.

4. Assess limits

Discuss incomplete collection, metabolism and renal changes before attributing a recovery difference to absorption.

Observations and Record

Record component	Value
Interval / volume / concentration	_____
Unchanged amount by interval	_____
Total recovered amount	_____
Dose-normalised comparison	_____
Collection / renal limitations	_____

Biopharmaceutics and Pharmacokinetics

Worked Example

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

- $A_{e,total} = \sum C_i \times V_i$. Relative F estimate = $(A_{e,test}/Dose_{test}) / (A_{e,reference}/Dose_{reference})$, under the stated unchanged-excretion assumptions.
- Example: equal doses with recoveries of 30 and 40 mg give a relative estimate of 0.75; incomplete collection would invalidate that conclusion.

Result

Dataset / method: _____. Calculated outcome and units: _____. Comparison: _____. Assumption or limitation: _____.

Precautions

- Record units, sampling times, dilution and the assumptions of the selected model.
- Use supplied human/animal data or the approved in-vitro teaching method; no new human/animal dosing or surgical preparation is prescribed.
- Keep an illustrative calculation separate from the actual result and do not use it as an individual patient dosing instruction.

Viva Questions and Answers

1. Why state model assumptions?

The derived parameter is valid only when the data and model satisfy them.

2. What accompanies a pharmacokinetic result?

Its units, dataset, calculation method and relevant limitation.

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