

Metabolic Pathways and Drug Elimination

Experiment 14 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To analyse the assigned metabolic pathways and drug elimination experiment or teaching dataset.

Principle

Elimination includes removal of unchanged drug and formation/removal of metabolites. A concentration decline alone does not identify one metabolic pathway.

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. Map the supplied pathway

Label parent compound and assigned metabolites and identify the stated transformation classes.

2. Read recovery data

Record parent/metabolite amounts and the collection basis.

3. Assess kinetics

Compare concentration-time and recovery observations using the assigned model.

4. Conclude

Distinguish measured recovery from unmeasured pathways and avoid assuming complete mass balance when the data are incomplete.

Observations and Record

Record component	Value
Parent / metabolite identifiers	_____
Pathway classes	_____
Recovery basis	_____
Measured fraction	_____
Unmeasured or uncertain fraction	_____

Biopharmaceutics and Pharmacokinetics

Worked Example

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

- Measured recovery (%) = sum of correctly equivalent recovered amounts / administered amount × 100; use a common parent-equivalent or molar basis.
- Example: 40% parent-equivalent recovery plus 30% metabolite-equivalent recovery totals 70%; the remaining 30% is unaccounted for in that record.

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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