Bioavailability from Supplied Animal or Human Data

Experiment 6 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To analyse the assigned bioavailability from supplied animal or human data experiment or teaching dataset.

Principle

Bioavailability compares systemic exposure on a dose-normalised basis when clearance and the model conditions are appropriately comparable.

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. Identify routes and datasets

Record administered amounts, route, concentration units and sampling coverage from the supplied study.

2. Calculate exposure

Use the assigned AUC method and assess terminal extrapolation.

3. Normalise

Use dose-normalised exposure and clearly identify an intravenous or other comparator.

4. Report

Distinguish absolute from relative bioavailability and state assumptions and variability.

Observations and Record

Record component	Value
Route / dose	_____
AUC and unit	_____
Comparator	_____
Dose-normalised ratio	_____
Assumptions	_____

Worked Example

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

- Absolute F = (AUCextravascular × DoseIV)/(AUCIV × Doseextravascular).
- Example: AUCextravascular = 20, AUCIV = 25, DoseIV = 50 and Doseextravascular = 100 in matched units give F = 0.40, or 40%.

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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