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Analgesic Inflammatory Local-Anaesthetic and Pupil-Response Screens

Practical 12 - Pharmacology simulation and data practical

Aim

To analyse a supplied pharmacological screening dataset with appropriate controls.

Principle

Screening endpoints are operational measurements. Blinding, randomisation, baseline comparability, welfare and confounding effects determine what the results support.

Materials and Requirements

- Supplied anonymised teaching traces or datasets
- Study design, controls, units and instrument calibration records
- Ethics and welfare records where the original study involved animals
- Approved method or teaching-data pack and a dated record sheet

Procedure

1. Define the preparation or dataset, study question and method version. Record identities, units and the criteria to be used before examining the outcome.
2. Identify the study question, experimental unit, controls and original approval or data provenance. This notes exercise uses records or simulation; it is not authorisation to perform animal procedures.
3. Identify the named screen, species in the source study, randomisation, blinding, endpoint definitions and humane limits.
4. Review raw time or individual-unit records and baseline comparability before deriving summary scores.
5. Calculate only the screen-appropriate effects, retain missing observations and evaluate confounders such as sedation, motor changes or collection loss.
6. Summarise independent experimental units, variability, exclusions and limitations; retain all original traces and data.
7. Retain the original observations and calculations. State deviations, missing information and the limits of the conclusion; do not replace measured values with expected results.

Observations and Record

Enter actual measurements or the supplied teaching data. Record the method, material identity, conditions and units.

Group / preparation	Condition / time	Raw endpoint	Derived result / interpretation
Vehicle / baseline	Record	Enter	Evaluate
Reference condition	Record	Enter	Evaluate
Test condition	Record	Enter	Calculate

Calculations

- For an appropriate continuous endpoint: relative reduction (%) = (control - test)/control x 100
- Do not apply ratio arithmetic automatically to ordinal scales.

Worked Example

Illustrative swelling is 0.80 units in control and 0.50 in test: reduction = 37.5%. Compare matched baselines and measurement uncertainty.

Analgesic, inflammatory, local-anaesthetic and pupil-response records

• Separate nociceptive latency, inflammatory swelling, local sensory-response and pupil-diameter datasets, preserving each method and welfare endpoint.
• Avoid equating motor suppression with analgesia or pupil change with a unique receptor mechanism.

Result and Interpretation

• Present independent-unit results, uncertainty and a conclusion limited to the model and endpoint.

Precautions

• Apply replacement, reduction and refinement to study planning.
• Any live work requires the current institutional and Indian CCSEA/IAEC framework, trained staff and an approved protocol.
• Do not convert a teaching calculation into an unapproved animal or patient procedure.

Viva Questions and Answers

Why blind scoring?

It reduces expectation-related assessment bias.

What is a confounder?

A factor that can explain the endpoint apart from the proposed effect.

Does a positive screen prove clinical efficacy?

Further relevant evidence is required.

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