

Experiment 1

Selection of Animals for Experimental Use in Pharmacology

Aim

To study the criteria for selection and identification of laboratory animals used in experimental pharmacology studies.

Apparatus/Materials Required

- Laboratory animals (mice, rats, rabbits, frogs)
- Animal cages
- Electronic weighing balance
- Animal handling gloves
- Marker or identification tags
- Record sheets

Theory

Experimental pharmacology involves the study of drug actions using animal models before clinical trials in humans. The use of animals allows researchers to investigate the pharmacological activity, toxicity, and mechanism of action of drugs.

Selection of appropriate experimental animals is essential to ensure:

- Reproducibility of results
- Reliable pharmacological data
- Ethical compliance

Commonly used laboratory animals:

<i>Animal</i>	<i>Scientific Name</i>	<i>Major Uses</i>
Mouse	<i>Mus musculus</i>	Analgesic, anticonvulsant studies
Rat	<i>Rattus norvegicus</i>	Behavioral and toxicology studies
Rabbit	<i>Oryctolagus cuniculus</i>	Ophthalmic and pyrogen tests
Frog	<i>Rana tigrina</i>	Cardiovascular experiments

Laboratory animals should be selected based on:

- Species
- Strain
- Age
- Sex
- Body weight
- Health condition

Animals used in pharmacological studies must be maintained under standard laboratory conditions including proper nutrition, temperature control, and hygienic housing.

Principle

Proper selection of laboratory animals ensures:

- Standardization of experimental conditions
- Accurate interpretation of pharmacological effects
- Compliance with ethical guidelines such as CPCSEA regulations

Procedure

1. Observe different laboratory animals available in the pharmacology laboratory.
2. Identify each species (mouse, rat, rabbit, frog).
3. Record the body weight of each animal using an electronic balance.
4. Observe general health conditions including:
 - Physical activity
 - Fur condition
 - Eye appearance
5. Confirm that animals are free from:
 - Infection
 - Injury
 - Abnormal behavior
6. Record the species, weight, and health status in the observation table.

Observation Table

<i>Animal species</i>	<i>Body Weight (g/kg)</i>	<i>Age</i>	<i>Health condition</i>	<i>Remarks</i>
Mouse				
Rat				
Rabbit				
Frog				

Dose Calculation Example

If the body weight of a mouse is 25 g, and the drug dose required is 10 mg/kg:

$$\begin{aligned}\text{Dose} &= \text{Body weight} \times \text{Required dose} \\ &= 0.025 \times 10 \\ &= 0.25 \text{ mg}\end{aligned}$$

Therefore, 0.25 mg of drug should be administered.

Result

The different laboratory animals used in experimental pharmacology were identified and evaluated based on selection criteria such as species, body weight, and health condition.

Precautions

- Handle animals gently to avoid stress.
- Do not expose animals to extreme temperatures.
- Avoid overcrowding in cages.
- Use gloves during handling.

Ethical Considerations

All experiments involving animals must follow CPCSEA guidelines.

Important principles:

- Replacement: Use alternatives when possible
- Reduction: Use minimum number of animals
- Refinement – minimize pain and distress

Viva Voce

1. Why are animals used in pharmacological experiments?
2. What are the criteria for selecting laboratory animals?
3. What is CPCSEA?
4. What are the common laboratory animals used in pharmacology?
5. Why is body weight important in drug administration?