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Diploma in Pharmacy 2nd Year

Pharmacology

Experiment

To study different routes of drug administration in animals

Aim:

To study different routes of drug administration in animals

Reference :

‘ Dr. P.Mudagal Manjunatha , “Practical Manual of Pharmacology”
Published by Nirali Prakashan, Page no 28 - 32

Theory :

Routes of Drug Administration

- 1) **Enteral Route:** Drugs are introduced directly into any part of GIT. It could be:
 - i. **Oral Route:** The drug is swallowed through mouth with water or food This route is economic, convenient, safe, and some animals can be trained to cooperate voluntarily. This route is not referable since it is inaccurate.
 - ii. **Intra-gastric Route:** The drug is administered directly into the oesophagus or stomach. It is often used instead of mixing the substance in water or food. This method is accurate for dosing of animals. A gastric lavage tube (small curved, metallic tube with ball on the tip) is often used without anaesthesia.
- 2) **Parenteral Route:** This route involves
 - i. Intravenous (IV): Into the venous bloodstream.
 - ii. Intraperitoneal (IP): Into the abdominal cavity.

- iii. Subcutaneous (SC): Under the skin.
- iv. Intramuscular (IM): Into a muscle.
- v. Intradermal (ID): Into or between layers of skin.
- vi. Intrathecal (IT): Into the subarachnoid space of the spinal cord.
- vii. Intracranial (IC): Into the substance of the brain.

Table 1: Site of Parenteral Route in Various Animals

Site	Species
Jugular vein	Cat, sheep, dog, goat, rabbit, house, cow
Cephalic vein (Fore limb)	Dog, cat, large primates.
Saphenous vein (Hind limb)	Monkey, dog, guinea pig (difficult)
Tail vein	Rat, mouse
Marginal ear vein	Rabbit, pig
Alar vein (Wing vein)	Bird
Femoral vein	Monkey, cat

3) Topical Route: It is the most convenient route for local anaesthetics. Ointments and creams that can be easily applied on the surface of skin membrane. Eye drops and ointments are also used administered by this route. Animals, like rabbit, guinea pig and rat, are administered drug using this route.

Table 2: Needle Sizes and Recommended Injection's Volumes

Species	Intravenous	Intraperitoneal	Intramuscular	Subcutaneous
Mouse	Lateral tail vein, 0.2ml, ~ 25ga	~ 2-3ml, ~ 25ga	NR Quadriceps/posterior thigh, 0.05ml, ~ 25ga	Scruff, 2-3ml, ~ 20ga
Rat	Lateral tain vein, 0.5ml, ~ 23ga	~ 5-10ml, ~ 21ga	NR Quadriceps/posterior thigh, 0.3ml, ~ 23-25ga	Scruff, 5-10ml, ~ 20ga
Hamster	Femoral/jugular vein (cut down), 0.3ml, ~ 25ga	~ 3-4ml, ~ 21ga	NR Quadriceps/posterior thigh, 0.1ml, ~ 25ga	Scruff, 3-4ml, ~ 20ga
Guinea Pig	Ear vein, saphenous vein, 0.5ml, ~ 23ga	10-15ml, ~ 21ga	Quadriceps/posterior thigh, 0.3ml, ~ 21ga	Scruff, 5-10ml, ~ 20ga
Rabbit	Marginal ear vein, 1-5ml (slowly), ~ 21ga	50-100ml, ~ 20ga	Quadriceps/posterior lumbar muscles, 0.5-1ml, ~ 20ga	Scruff, flank 30-50ml, ~ 20ga
Cat	Cephalic vein, 2-5ml (slowly), ~ 21ga	50-100ml, ~ 20ga	Quadriceps/posterior thigh, 1ml, ~ 20ga	Scruff, back, 50-100ml, ~ 20ga
Dog	Cephalic vein, 10-15ml (slowly), ~ 21ga	100-200ml, ~ 18ga	Quadriceps/posterior thigh, 5ml, ~ 20ga	Scruff, back, 100-200ml, ~ 20ga
Primate (Squirrel/Owl monkey, galago)	Femoral vein, 0.5-1ml (slowly), ~ 21ga	10-15ml, ~ 21ga	Quadriceps/posterior thigh, 0.5ml, ~ 21ga	Scruff, 5-10ml, ~ 20ga
Primate (Rhesus, Cyno Snow)	Cephalic, recurrent tarsal, or jugular veins, 5-10ml (slowly), ~ 20ga	~ 25-50ml, ~ 20ga	Quadriceps/posterior triceps, 1-3ml, ~ 20ga	Scruff, 10-30ml, ~ 20ga
Primate (Baboon)	Cephalic, recurrent tarsal, and jugular veins, 10-20ml (slowly), ~ 20ga	50-100ml, ~ 18ga	Quadriceps/posterior triceps, 1-3ml, ~ 20ga	Scruff, 10-30ml per site, 60-100 total, ~ 20ga

*Must be chemically restrained.

NR = Not recommended. Requires extreme care.

Result :

Experimental pharmacology was studied.

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