

31. VETERINARY PHARMACOLOGY

Unit 1: General Pharmacology: Development and Scope, branches of pharmacology, Terminology, Sources and nature of drugs. Pharmacopoeia and drug compendia. Drug Schedules. Factor modifying drug activity. Definition of pharmaco-genomics, polymorphism and its use in drug development.

Pharmacodynamics: Drug structure activity relationship. Drug receptor interaction. Role of secondary messengers. Drug modulation via different types of channels. Characterisation of agonist, antagonists.

Pharmacokinetics : Principles, Drug metabolism and biotransformation. Factors modifying drug kinetics. Kinetic constants. Different models, determination of kinetic parameters and application in rational dosage regimen.

Pharmacometrics: Organisation and screening programmes and drug development. Multidimensional screening methods, bioassays. Determination of median doses – LD50, ED50, therapeutic indices. Types of dose response relationship.

Unit 2: Drug Acting on Central Nervous System

Role of neurotransmitters in CNS. Sedatives, Hypnotics, General anaesthetics, Hypotheses and clinical stages of anaesthesia. Pre-and post-anaesthetics, Molecular mechanism of action of inhalent and parenteral anaesthetics. Anticonvulsants. Tranquilizers. Narcotic and non-narcotic analgesics and antipyretics. Drugs affecting behaviour. Drug dependence and addiction and abuses. CNS stimulants. Muscle relaxants. Local anaesthetics.

Unit 3: Drugs Acting on Humoral and Autonomic Nervous Systems

Neurohumoral transmission. Adrenergic and antiadranergic drugs including adrenergic neuron blockers. Cholinergic and anticholinergic drugs. Purinergic and Adenosine receptors. Dopaminergic and antidopaminergic agents. Nitric oxide mediators. Neuromuscular and ganglion stimulants and ganglion blockers.

Unit 4: Drugs Acting on Cardio-vascular and Respiratory Systems

Drugs acting on heart and blood vessels. Antihypotensive and anti-arrhythmic agents. Blood coagulants and anti-coagulants. Haematinics. Haemorrhagic shock and its treatment.

Expectorants, antiussives. Cough sedatives. Bronchodilators. Mucolytic agents. Analeptics.

Unit 5: Drugs Acting on Digestive System

Stomachics. Antacids. Carminatives and antizymotics. Emetics and antemetics. Cathartics. Antidiarrhoeal agents. Antispasmodics. Pharmacology of rumen and rumenotoric drugs. Drugs acting on hepatobiliary system.

Unit 6: Drug action on Uro-genital System

Drugs altering fluid balance. Diuretics and antidiuretics. General principles of electrolyte and therapy. Drugs acting on uterus (oxytocis and tocolytics). Therapy of infertility and improving conception and synchronization of oestrus

Unit 7: Endocrine Pharmacology

Mode of action and synthesis of pituitary hormones. Therapeutics of non-pituitary gonadotropin, adrenocorticoids, sex hormones, insulin, thyroid hormones, antithyroid agents, calcitonin, parathormone.

Unit 8: Autacoids

Pharmacological effects and therapeutics of histamine, antihistaminic agents, 5-HT its antagonists, prostaglandins and leukotrienes, peptides and kinins, rennin and angiotensins. Platelet activators. Anti-inflammatory drugs.

Unit 9: Chemotherapy

General principles. Drug allergy, hypersensitivity, mechanism of resistance. Antiseptics and Disinfectants. Chemistry, mechanism of action, therapeutics of sulphonamides (gut active, systemic), trimethoprim and congener.

Antibiotics: Penicillin, cephalosporins, aminoglycosides, macrolide, surface active, tetracyclines, polypeptide. Antifungal and other emerging antibiotics. Quinolones, nitrofurans, Antitubercular, antiviral and antineoplastic drugs.

Anthelmintic: Antinematodal, anticestodal, antitreumatodal drugs. Antiprotozoans, Anticoccidials. Drugs used for ectoparasite control.

Concept of Gene based therapy, prospects of disease target therapy, overview of indigenous medicinal drugs, its components for therapeutic use.

Unit 10: Toxicology:

Terminology. Classification of poisons. Toxicity rating. Principles of selective toxicity. Toxicodynamics. Toxicokinetics. Diagnosis and treatment of poisoning (anti-dotal and non anti-dotal). Mechanism of detoxification. Poisons causing respiratory insufficiency. Toxicology of common inorganic compounds. Toxicity of metals, non-metals and metalloids. Poisonous plant-cyanogenic, nitrate and oxalate producers. Mycotoxins : aflatoxin, rubratoxin, ergot. Toxic ferns. Venoms from snakes, scorpions, toads, etc. and treatment.

Unit 11: Ecotoxicology

Types and identification of industrial contamination and pollution residual toxicity. Impact of pesticides, fungicides, weedicides, fertilizers on biosphere. Chemical warfare agents and radiation hazards. Toxicity from food additives, preservatives. Statutory regulation on agrochemical formulation and their uses. Newer parameters, immunotoxicity, teratogenicity, mutagenicity, embryotoxicity for toxicological evaluation.

Unit 12: Miscellaneous Topics:

Drugs promoting growth and production. Agents used for doping and restraining of wild animals. Euthanising agents. Drug control and regulation.

