

PROGRAM OF THE COURSE

General Principles

Development of innovative drugs: Preclinical, Clinical (Phases 1-3) and Postmarketing (Phase 4) studies.

Pharmacokinetics

Routes of drug administration, kinetics of drug dissolution, absorption, distribution, metabolism and elimination (DADME). Drug kinetics after single or repeated administration, significance and interpretation of the various kinetic parameters: bioavailability, renal excretion, plasma protein binding, clearance, volume of distribution, half life, time to reach maximal concentration, maximal concentration attained.

Pharmacodynamics

Mechanisms of drug action and relationships between drug concentration and effect; on and off -target effect of drugs ; drug-receptor interaction, structure-activity relationship (agonist, antagonist, partial agonist, inverse agonist, allosteric modulators); receptor modulation by drug exposure, mechanisms of information transfer between intra and extracellular compartments, second messengers, protein kinases.

Pharmacogenetics

Genetically determined variability of response to drugs

Drug Side Effects

Risk/benefit ratio of drugs – therapeutic index; adverse drug reactions (ADRs), tolerance and physical dependence; mechanisms of drug interactions with: drugs, environmental pollutants, food, herbal remedies, substances of abuse licit and illicit. Evaluation of drug and xenobiotic toxicity (dose-effect and time-effects relationships)

Systems Pharmacology

Drugs interfering with Autonomic Nervous System

Cholinergic- (muscarinic and nicotinic) agonists and antagonists; adrenergic (alpha and beta) agonists and antagonists

Agents active at autonomic ganglia

Drugs interfering with Somatic Nervous System

Neuromuscular blockers: non-depolarizing (benzylisochinolines and aminosteroidal) and depolarizing (succinylcholine) compounds.

Drugs acting at Central Nervous System

Neurotransmitters, neuromodulators and neurohormones and their receptors

Drugs for suppression of Pain: loss of consciousness (General Anesthetics); maintenance of consciousness (Narcotic and Non-Narcotic analgesics, Local Anesthetics)

Drugs for Anxiety and Hypnotics

Drugs for Inflammation and Fever

Prostaglandins, thromboxanes, prostacyclins

Non steroidal anti-inflammatory drugs, COX-1 and COX-2 inhibitors; steroidal anti-inflammatory drugs (glucocorticoids).

Drugs acting on Cardiovascular System

Drugs for Hypertension.

Drugs interfering with coagulation: inhibitors of platelet aggregation; anticoagulants (parenteral and oral), thrombolitics; anti-hemorrhagics.

Drugs acting on Immune System

Anti histamine H1 receptor antagonists

Antibacterial Chemotherapy

General principles of Antibacterial Chemotherapy with particular regard to the treatment of Odontogenic Infections and Prophylaxis Prior to Dental Procedures.

Antibacterial Chemotherapy: Drug Resistance, Pharmacokinetics and Pharmacodynamics of Antibiotics.

Classes of antibacterials: Beta-lactam antibiotics (Penicillins, Cephalosporins, Carbapenems, Monobactams); Glycopeptides; Tetracyclines; Chloramphenicol; Macrolides; Lincosamides (clindamycin); Aminoglycosides; Fluoroquinolones; Metronidazole; Sulfonamides, trimetoprim-sulfamethoxazole. Mechanism of action, clinical uses, selective toxicity, Hypersensitivity and resistance mechanisms. Anti-tuberculosis drugs: general principles and strategies. Pharmacological properties of individual drugs and adverse effects.

Antifungal Chemotherapy

Amphotericin B, Nystatin; Imidazoles and triazoles; Griseofulvin. Topical antifungal drugs.

Antiviral Chemotherapy

Drugs active against herpesviruses; drugs active against retroviruses; other antiviral drugs.

Cancer Chemotherapy

General principles of cancer chemotherapy and therapeutic strategies.

Classes of anti-cancer drugs: Alkylating agents, Antimetabolites, Topoisomerase inhibitors; Vinca alkaloids, Antibiotics. Hormone therapy. Target therapy. Mechanism of action, clinical uses, selective toxicity, resistance mechanisms

Drugs for Odontoiatric Emergencies

Cardiovascular (angina, cardiocirculatory collapse, hypertensive crisis, myocardial infarction , syncope,)

Non Cardiovascular (acute allergic reactions, asthma attack, hemorrhage, hypoglycemia, local anesthetic reactions, seizures)

RECOMMENDED TEXTBOOKS

Goodman & Gilman's The Pharmacological Basis of Therapeutics, 13th Ed., october 2017, Brunton, L.L., Knollmann, B.C., Hilal-Dadan, R. ; McGraw Hill Medical, USA.

Farmacologia in Odontoiatria, Reprint 2nd Ed. 2008, Amico-Roxas M., Caputi, A.P., Del Tacca, M. UTET Scienze mediche, Torino, Italia