

Department of Medical Pharmacology

Faculty of Stomatology ( Dentistry). IV semester

**General pharmacology**

The Plan of Lectures

N	Name of the topic	hour
1.	General principles of Pharmacology, the Nature of the drug. Pharmacodynamics and Pharmacokinetic principles. Development of new drugs. Pharmacodynamics and signaling mechanisms and drug action. Relation between drug concentration and response. Concentration effect curves, drug receptors. Relation between drug dose and clinical response. Variation in drug responsiveness. Beneficial and toxic effects of drugs.	2
2.	Pharmacokinetics. Main pharmacokinetic parameters, different ways of drug administration. The target concentration approach to designing a rational dosage regimen: maintenance and loading doses. Interpretation of drug concentration measurements. Drug biotransformation, the role of biotransformation in drug disposition. Phase I and phase II reactions, enzyme induction and inhibition, individual differences and genetic factors. Drug-drug interactions during metabolism.	2
3.	Main targets for pharmacologic modulation of autonomic nervous system (ANS). Types of neurotransmitters autonomic receptors. Functional organization of autonomic activity. Pharmacologic modification of autonomic function.	2
4.	Classification and pharmacology of drugs acting on cholinergic system. Cholinergic activating and cholinesterase inhibiting drugs. Classification of cholinergic blocking drugs. Pharmacology of muscarinic receptor blocking drugs, neuromuscular blocking drugs.	2
5.	Adrenoreceptor agonists and other sympathomimetic drugs (direct and indirect sympathomimetics). Molecular pharmacology underlying their action and organ system effects. Classification and pharmacology of adrenoreceptor antagonists. alpha- and beta-receptor antagonists, their mechanism of action and pharmacologic effects. Description of specific agents.	2
6.	Drugs used in hypertension: diuretics, sympathoplegics and sympathoblockers, vasodilators, ACE inhibitors, Angiotensin receptor blockers, renin inhibitors. Vasoactive peptides. Antiarrhythmic drugs.	2
7.	Drugs used in the treatment for angina pectoris: nitrates, calcium channel blockers, beta blockers, metabolism modifiers and rate inhibitors. Drugs used in coagulation disorders.	2

	Anticlotting drugs: anticoagulants, thrombolytic and antiplatelet drugs. Drugs that facilitate clotting.	
8.	Targets of CNS drug action, sites and mechanisms of drug action. Sedative-hypnotics: benzodiazepines, barbiturates, miscellaneous agents. Clinically important alcohols and their antagonists.	2
9.	General anesthetics: inhaled and intravenous. Local anesthetics: esters and amide agents.	2
10.	Opioids: agonists, mixed agonist-antagonists and antagonist drugs. Drugs of abuse	2
11.	Pharmacology of histamine and histamine receptor antagonists. Nonsteroidal anti-inflammatory drugs, disease modifying antirheumatic drugs, nonopioid analgesics and drugs used in gout Adrenocorticosteroids: naturally occurring glucocorticoids and their synthetic analogs.	2
12.	Drugs used for gastrointestinal disorders: acid-peptic diseases, motility disorders, drugs for irritable bowel syndrome and inflammatory bowel disease, antiemetics and other agents.	2
13	Beta-lactam antibiotics and other cell wall synthesis inhibitors (penicillins, cephalosporins etc.). Bacterial protein synthesis inhibitors: chloramphenicol, tetracycline, macrolides, clindamycin, streptogramins and linezolid. Aminoglycosides,	2
14	Synthetic antimicrobial agents: sulfonamides, trimethoprim and fluoroquinolones, metronidazole and urinary antiseptics. Drugs acting on fungi and classification and main peculiarities of antiviral drugs for herpes, HIV, influenza and HCV and HBV. Disinfectants, Antiseptics, Sterilants	2

### The Plan of practical sessions

N	Name of the topic	hour
1	Pharmacokinetics. Main pharmacokinetic parameters, different ways of drug administration. The target concentration approach to designing a rational dosage regimen: maintenance and loading doses. Interpretation of drug concentration measurements.	2
2.	Drug biotransformation, the role of biotransformation in drug disposition. Phase I and phase II reactions, enzyme induction and inhibition, individual differences and genetic factors. Drug-drug interactions during metabolism.	2
3	Pharmacodynamics and signaling mechanisms and drug action. Relation between drug concentration and response.	2
4	Relation between drug dose and clinical response. Variation in drug responsiveness. Beneficial and toxic effects of drugs.	2
5	Main targets for pharmacologic modulation of autonomic nervous system (ANS). Types of neurotransmitters autonomic receptors. Functional organization of autonomic activity and pharmacologic modification of autonomic function.	2
6	Classification and pharmacology of drugs acting on cholinergic system. Cholinergic activating and cholinesterase inhibiting drugs and their toxic effects.	2
7	Classification of cholinergic blocking drugs. Pharmacology of muscarinic receptor blocking drugs, depolarizing and nondepolarizing neuromuscular blocking drugs.	2
8	Adrenoreceptor agonists and other sympathomimetic drugs (direct and indirect sympathomimetics). Molecular pharmacology underlying their action and organ system effects.	2
9	Classification and pharmacology of adrenoreceptor antagonists. $\alpha$ - and $\beta$ -receptor antagonists, their mechanism of action and pharmacologic effects. Description of specific agents.	2
10.	<b>Midterm N1 – General pharmacology, drugs acting on ANS</b>	2
11.	Drugs used in hypertension: diuretics, sympathoplegics and sympathoblockers, vasodilators, ACE inhibitors, Angiotensin receptor blockers, renin inhibitors. Vasoactive peptides.	2
12.	Diuretics: thiazides and related agents, loop diuretics, potassium sparing diuretics, carbonic anhydrase inhibitors, osmotic diuretics.	2
13.	Antiarrhythmic drugs, classification, general characteristics of the classes and their clinical uses.	2
14.	Drugs used in the treatment for angina pectoris: nitrates, calcium channel blockers, $\beta$ blockers, metabolism modifiers and rate inhibitors.	2

15	Drugs used in coagulation disorders. Anticlotting drugs: anticoagulants, thrombolytics and antiplatelet drugs. Drugs that facilitate clotting.	2
16.	Targets of CNS drug action, sites and mechanisms of drug action. Sedative-hypnotics: benzodiazepines, barbiturates, miscellaneous agents. Clinically important alcohols and their antagonists.	2
17	General anesthetics: inhaled and intravenous. Local anesthetics: esters and amide agents.	2
18.	Opioids: agonists, mixed agonist-antagonists and antagonist drugs. Drugs of abuse	2
19.	<b>Midterm N2 – Drugs acting on cardiovascular and central nervous systems.</b>	2
20	Nonsteroidal anti-inflammatory drugs, disease modifying antirheumatic drugs, nonopioid analgesics and drugs used in gout.	2
21.	Adrenocorticosteroids: naturally occurring glucocorticoids and their synthetic analogs.	2
22	Pharmacology of histamine and histamine receptor antagonists. drugs used for allergic rhinitis and cough.	2
23	Drugs affecting respiratory system, drugs used for treatment of acute and chronic asthma, chronic obstructive pulmonary disease.	2
24.	Drugs used for gastrointestinal disorders: acid-peptic diseases, motility disorders, drugs for irritable bowel syndrome and inflammatory bowel disease, antiemetics and other agents.	2
25	Drugs used for treatment of diabetes mellitus, Insulin and other glucose lowering drugs	2
26	Principles of antimicrobial therapy, rational antimicrobial therapy, combinations of antimicrobial drugs.	2
27	Beta-lactam antibiotics and other cell wall synthesis inhibitors (penicillins, cephalosporins etc.).	2
28	Bacterial protein synthesis inhibitors: chloramphenicol, tetracyclines, macrolides, clindamycin, streptogramins and linezolid. Aminoglycosides.	2
29	Synthetic antimicrobial agents: sulfonamides, trimethoprim and fluoroquinolones, metronidazole. Drugs acting on fungi.	2
30	<b>Midterm N3 - Drugs affecting respiratory, GI and endocrine system, NSAID and chemotherapeutic drugs.</b>	2