THE QUESTIONS FOR THE EXAM IN PHARMACOLOGY

Basic principles of pharmacology. Pharmacodynamics & Pharmacokinetics.
1. Pharmacology: definition and the content. Pharmacokinetics of drugs, its main constituents.
2. Pharmacodynamics: definition and the content. Types (mechanisms) of action of drugs, their brief characterization.
3. Ways (routes) of administration of medicinal substances to an organism. Advantages and disadvantages of the oral way of administration.
4. Comparison of oral, sublingual, rectal, intranasal and inhalational ways (routes) of administration of medicinal substances, their advantages and disadvantages.
5. Comparison of parenteral ways of administration of medicinal substances. The requirements applied to medicinal forms for injections. Transdermal way of administration and it use.
7. Transport and distribution of drugs in an organism, factors influencing on them. One and two-compartment models of distribution; volume of distribution and its practical value.
8. Elimination and its components. Half-life (t ½) and clearance.
10. Receptors: definition, types of receptors. Drugs as agonists (including partial) and antagonists of receptors.
11. The main mechanisms of interaction of drugs with receptors. Brief characterization of G-protein-associated receptors (with examples); secondary messengers and their role in mechanisms of action of drugs.
12. Receptors associated with ion channels, thyrosine kinase-associated receptors and intracellular receptors: brief characterization, examples.
13. Local, reflex, systemic (resorbtive), selective and non-selective (protoplasmic) actions: brief characterization.
14. Direct and indirect, reversible and irreversible, main and adverse (side) actions: brief characterization.
18. Dependence of action of drugs on internal factors (age and sex, pathological states). Distinctive features of pharmacokinetics and pharmacodynamics of drugs in older persons and children.
21. The phenomena developing at repeated application of drugs: tolerance, tachyphylaxis, a sensitization (allergy).
23. Kinds of medicinal therapy, their characterization and use.
25. Drug allergy (drugs illness), definition, symptoms, diagnostics, the preventive measurements and the treatment.
26. The super infections caused by drugs (the causes, kinds, treatment and preventive measurements).

**Drugs acting on the nervous system.**

1. Classification of drugs acting on the afferent nervous system. Local anesthetics: definition, mechanism of action, classification. Factors influencing on the effect of the local anesthetics. Astringent drugs, absorbing drugs, counterirritant drugs (main representatives, mechanisms of action, application).
2. Distinctive features of the most known local anesthetics. Ways of application of the local anesthetics (kinds of anesthesia). Resorbtive action of the local anesthetics.
10. Beta-adrenergic antagonists: classification, therapeutic and adverse effects, differences between groups, application.
12. Eicosanoids: definition, the main pathways of biosynthesis. The main effects of prostanoids and leukotriens. Preparations of prostanoids and their application. Eicosanoid antagonists, their effects and application.
13. Nitric oxide: biosynthesis, main effects. Nitric oxide donors and drugs increasing the effects of endogenous nitric oxide: main representatives, application.
15. General anesthesia: definition, main features. Preanesthetic medications. Comparison of various inhalation and non-inhalation (intravenous) anesthetics.
18. Opioid (narcotic) analgesics: mechanism of action, classification. The main pharmacologic effects of morphine and other strong agonists of opioid receptors.
23. Antipsychotic drugs: definition, classification, mechanism of action. Therapeutic and adverse effects of antipsychotic drugs, application. Distinctive features of the most important antipsychotic drugs. Comparison of typical and atypical antipsychotic.
24. Anxiolytic (sedative-hypnotic) drugs: definition, classification, possible mechanisms of action. Therapeutic and adverse effects, pharmacokinetic properties and possible application of benzodiazepine anxiolytics. Other anxiolytics (5 HT_1A serotonin receptor agonists).
27. Psychostimulants (psychomotor stimulants): definition, main representatives, their mechanisms of action, effects, possible application. Nootropic drugs (psychometabolic stimulators): definition, main representatives, mechanisms of action, effects, possible application.

Drugs acting on organs and systems of body.
1. Classification of diuretic drugs, sites of action of the main groups of diuretic drugs. Brief characterization of the main groups of diuretics by their mechanisms of action, efficacy, influence on electrolyte balance, adverse effects and application.
2. Classification of drugs acting on myometrium, possible application of groups.
3. Basic principles of pathogenetic therapy of an arterial hypertension: chains of pathogenesis of hypertension and main directions of drug treatment (to specify the pharmacological groups and their main representatives).
4. Classification of hypotensive drugs that alter sympathetic nervous system function (to specify subgroups and their main representatives), main pharmacokinetic and pharmacodynamic properties (including the mechanism of action and side effects).
5. Hypotensive drugs which inhibit renin-angiotensin system (to specify subgroups and their main representatives), main pharmacokinetic and pharmacodynamic properties (including the mechanism of action and side effects).
6. Hypotensive drugs from the group of vasodilators (to specify subgroups and its main representatives), main pharmacokinetic and pharmacodynamic properties (including the mechanism of action and side effects). Hypotensive drugs that alter sodium and water balance (to specify subgroups and their main representatives), the mechanism of their hypotensive action, side effects.


8. Classification of antiarrhythmic drugs for tachyarrhythmia treatment (classification of Vaughan-Williams, with the list of main drugs). Pharmacodynamic and pharmacokinetic properties of the main representatives.


10. Drugs for the treatment of angina pectoris (antianginal drugs): the main groups, their mechanisms of action in angina pectoris, side effects.

11. Treatment of uncomplicated myocardial infarction: the main groups of drugs, mechanisms of their beneficial effects in myocardial infarction.

12. Drugs for the treatment of brain vascular disorders (migraine, stroke). Drugs used in peripheral vascular disorders.

13. Hypolipidemic drugs: definition, the main representatives, mechanisms of their action.

14. The main approaches for the treatment of the congestive heart failure, pharmacological groups for realizing of this approaches, mechanisms of their beneficial action in congestive heart failure.


17. Directions of pharmacotherapy of patients with a syndrome of bronchial obstruction (bronchial asthma and chronic obstructive pulmonary disease). Mechanisms of action of drugs and their place in a treatment of bronchial asthma, possible adverse effects.


21. The drugs used at disturbances of appetite. The drugs used at insufficient and excessive secretory function of pancreas. The pathogenetic therapy of acute pancreatitis. Hepatoprotectors: definition and application.


23. Laxative drugs (definition, classification, the mechanism of action, the indication for use). Emetic and antiemetic drugs (definition, classification, mechanisms of the action, indications).

24. Classification of drugs acting on hemostasis. Anticoagulant drugs: definition, classification, mechanisms of action, pharmacokinetic properties, possible application, adverse effects. Drugs used in overdosing of anticoagulants.
26. Antiplatelet drugs: definition, the main representatives, mechanisms of action, possible application, adverse effects. Thrombolytic (fibrinolytic) drugs: definition, the main representatives and their distinctive features, mechanisms of action, possible application.

27. Drugs for the treatment of bleeding disorders (hemostatic drugs): the main groups and their representatives, mechanisms of action, possible application, adverse effects.


**Hormonal drugs. Drugs influencing on the immune system and on an inflammation.**


2. Thyroid hormones – effects and application. Antithyroid drugs – mechanism of action, application, adverse effects. Calcitonin, parathyroid hormone, synthetic drugs influencing calcium balance – mechanisms of action, application.


4. Estrogen hormones and progestins: natural hormones and their physiologic effects, synthetic analogs and their distinctive feature. Possible application of the estrogens and progestins, adverse effects. Antagonists of estrogens and progesterone, their possible application. Oral contraceptive drugs: the main groups, mechanisms of action, administration, adverse effects.

5. Androgen hormones: natural hormones and their physiologic effects, synthetic analogs of the androgens, its possible application, adverse effects. Androgen antagonists and their application.

6. Glucocorticoids: natural hormones and their synthetic analogs, the main effects, comparison of natural and synthetic glucocorticoids, application and adverse effects. Mineralocorticoids, their effects and application. Antagonists of glucocorticoids and mineralocorticoids, their application.

7. The main components of the immune system. The main types of disorders of the immune system. Classification of drugs acting on the immune system. Immunomodulators: the main representatives, mechanisms of action, application.

8. Immunodepressants: the main representatives, mechanisms of action, application, adverse effects.

9. The main groups of drugs used in immediate-type allergic reactions, their mechanisms of action and application. Brief characterization of histamine H1-receptors antagonists (classification, pharmacokinetic and pharmacodynamic differences, adverse effects). Treatment of anaphylactic shock.


Chemotherapeutic agents.

1. Antiseptics and disinfectants (definition, classification with the name of the basic preparations, a principle of action, clinical significance).
3. β-lactamic antibiotics. Penicillins (classification, the mechanism and a spectrum of action, side effects, indications).
4. Cephalosporins and others β-lactamic antibiotics (classification, the mechanism and a spectrum of action, side effects, indications).
5. Macrolides and tetracyclines (classification, the mechanism of action, clinical indications). Side effects of tetracyclines and contraindications to their use.
7. Antibiotics of various groups (lincomycins, chloramphenicol, rifampicin, polymixins etc.): pharmacokinetics, spectra of action, application, side effects and their prevention).
8. Sulfonamides (a principle of action, classification, clinical significance, adverse effects).
9. Quinolones (a principle of action, classification, differences between groups, clinical significance, adverse effects). Brief characterization of nitrofurans, 8-oxyquinolines and nitroimidazole derivatives (the main representatives, application, adverse effects).
10. Antifungals (classification, a spectrum of action, pharmacokinetic and pharmacodynamic properties, indications for use and side effects).
13. Principles of the treatment of amebiasis, brief characterization of the main drugs. Treatment of other protozoal infections (trichomoniasis, lambliosis, toxoplasmosis, balantidiasis, leishmaniosis, tripanosomosis) – to indicate the main drugs.
15. Drugs for the treatment of viral diseases of respiratory system: (a flu or respiratory syncytial virus (RSV): classification, a spectrum of action, of pharmacokinetic and pharmacodynamic features, indications for use and side effects).

The Drugs for Prescription

1. Solution of Lidocaine in ampules for infiltrative anesthesia.
2. Solution of Lidocaine in ampules for IV administration.
3. Ointment of Pilocarpine.
4. Betanechole in tablets.
5. Neostigmine in tablets.
7. Solution of Atropine as eye drops.
8. Ipratropium as an aerosol.
10. Solution of Phenylephrine as eye drops.
11. Solution of Xylomethazoline as nasal drops.
14. Timolol as eye drops.
15. Sildenafil in tablets.
17. Disulfiram in tablets.
18. Chlordiazepoxide in tablets.
19. Solution of Morphine in ampules.
20. Tramadol in tablets.
22. Carbamazepine in tablets.
23. Levodopa in tablets.
24. Trifluoperazine in tablets.
25. Solution of Fluphenazine decanoate in ampules.
27. Imipramine in tablets.
28. Fluoxetine in tablets.
30. Salbutamol in aerosol.
32. Beclomethasone in aerosol.
33. Hydrochlorothiazide in tab.
34. Enalapril in tab.
35. Losartan in tab.
36. Procainamide in ampoules.
37. Amiodaron in tab.
38. Verapamil in ampoules.
39. Digoxin in tab.
40. Sibutramin in tab.
41. Ranitidine in tab.
42. Omeprazole in tab.
43. Drotaverine (No -Spa) in tab.
44. Bisacodyl in tab.
45. Loperamide in tab.
46. Metoclopramide in tab.
47. Spironolacton in tab.
48. Furosemide in ampoules.
49. Oxytocin in ampoules.
50. Nitroglycerine as sublingual tablets.
52. Amlodipine in tab.
53. Aspirin in tablets as an antiplatelet drug.
54. Clopidogrel in tablets.
55. Heparin in vials.
56. Cyanocobalamine in ampoules.
57. Sargramostim in vials.
58. Warfarin in tab.
59. Methimazole in tablets.
60. Glyburide in tablets.
61. Conjugated estrogens (Premarine) in tablets.
62. Flutamide in tablets.
63. Prednisolone in tablets.
64. Loratadine in tablets.
65. Cyclosporine in capsules.
66. Diclofenac in tablets.
67. Metotrexate in tablets.
68. Penicillin G in ampoules.
69. Amoxicillin in tab.
70. Amoxicillin/Clavulanat (Augmentin) in tab.
71. Cefazolin in ampoules.
72. Ceftriaxone in ampoules.
73. Imipenem/Cilastatin (Tienam) in ampoules.
74. Erythromycin in tab.
75. Azithromycin in tab.
76. Doxycycline in caps.
77. Clindamycin in caps.
78. Rifampicin in caps.
79. Linezolid in ampoules.
80. Gentamycin in ampoules.
81. Izoniazid in tab.
82. Etambutol in tab.
83. Natamycin in suppositories.
84. Itraconazole in tab.
85. Amphotericin B in ampoules;
86. Terbinafine in tab.
87. Acyclovir in tab.
88. Ozeltamivir in tab.
89. Ganciclovir in tab.
90. Zidovudine in tab.
91. Saquinavir in tab.
92. Mebendazole in tab.
93. Praziquantel in tab.
94. Metronidazole in tab.
95. Chloroquine in tab.