**Перечень вопросов к экзамену по дисциплине «Фармакология»**

**для студентов 3 курса, обучающихся на английском языке**

**по специальности «Фармация»**

The list of questions for the exam on "Pharmacology"

for 3rd year students (specialty "Pharmacy")

1. Routs of drug administration (classification, comparative characteristics).
2. Transport of drugs through biological membranes. Factors affecting the drug absorption and distribution.
3. Receptor mechanisms of drug action. Full and partial agonists, antagonists and agonists-antagonist.
4. Classification of drug receptors: G-protein coupled receptor, principles of signal transduction, examples of pharmacological ligands.
5. Classification of drug receptors: receptor with intrinsic ion channel, principles of signal transduction, examples of pharmacological ligands.
6. Classification of drug receptors: receptor tyrosine kinase, principles of signal transduction, examples of pharmacological ligands.
7. Classification of drug receptors: intracellular receptor regulating gene transcription, principles of signal transduction, examples of pharmacological ligands.
8. Pharmacokinetics: absorption, presystemic elimination, bioavailability.
9. Pharmacokinetics: bioavailability, apparent volume of distribution.
10. Pharmacokinetics: elimination, biotransformation, half-life. Microsomal enzyme inductors and inhibitors.
11. Ways of drug excretion. Drug clearance. Factors that change the drug clearance. General principles of drug choosing in renal and hepatic insufficiency.
12. Drug interaction (pharmaceutical, pharmacokinetic, pharmacodynamic).
13. Effects of repeated use of drug (tolerance, dependence, accumulation, sensibilisation).
14. Drug nomenclature. Drug doses: therapeutic, maintenance, toxic doses.
15. Types, structure and location of cholinergic receptors. Signal transduction. M-cholinergic agonists: pharmacological effects, therapeutic application, side effects.
16. M,N-cholinomimetics (cholinergic agonists). Direct and indirect action. The pharmacological effects, therapeutic application, side effects and contraindications. Principals of organophosphate poisoning treatment. Example of drug prescription.
17. M-cholinergic antagonists. Example of drug prescription. The pharmacological effects, therapeutic application, side effects and contraindications. Principals of atropine overdose treatment.
18. Drugs affecting the N-cholinergic receptors. Ganglionic blockers. The pharmacological effects, therapeutic application, side effects and contraindications.
19. Drugs affecting the N-cholinergic receptors. Muscle relaxants. The pharmacological effects, therapeutic application, side effects and contraindications. Example of drug prescription.
20. Types, structure and localization of adrenergic receptors. Signal transduction. α-adrenomimetics (adrenergic agonists): the pharmacological effects, therapeutic application, side effects and contraindications.
21. α,β-adrenomimetics (adrenergic agonists): the pharmacological effects, therapeutic application, side effects and contraindications.
22. β-adrenomimetics (adrenergic agonists): the pharmacological effects, therapeutic application, side effects and contraindications. Example of drug prescription.
23. α-adrenergic blockers: the pharmacological effects, therapeutic application, side effects and contraindications. Example of drug prescription.
24. β - adrenergic blockers: the pharmacological effects, therapeutic application, side effects and contraindications. Example of drug prescription.
25. Classification of antiarrhythmic drugs. Sodium channel blockers: group members, features of action, indications, side effects.
26. Antiarrhythmic drugs II, III and IV classes: group members, features of antiarrhythmic action, indications, side effects. Example of drug prescription.
27. Antiarrhythmic agents used in bradyarrhythmia and AV-block of the heart. Example of drug prescription.
28. Principles of pharmacotherapy of coronary artery disease. The main groups of antianginal agents. Nitrates: mechanism of action, indications, side effects. Example of drug prescription.
29. Mechanisms of antianginal action of β-adrenergic blockers and calcium channel blockers, indications, side effects. Example of drug prescription.
30. Calcium channel blockers: classification, pharmacological effects, indications, side effects. Example of drug prescription.
31. Hypolipidaemic drugs: classification, mechanisms of action, side effects. Example of statin prescription.
32. Diuretics: classification, comparative characteristics, indications for use, side effects. Example of drug prescription.
33. Antihypertensive drugs: the main groups, mechanisms of antihypertensive action, indications for use, side effects. Example of drug prescription.
34. Classification of antihypertensive agents for localization of action. Central sympatholytics: mechanisms of action, indications, side effects. Example of drug prescription.
35. Cardiac glycosides: mechanisms of action, pharmacological effects, comparative characteristics of drugs, indications. Symptoms of cardiac glycoside intoxication and treatment principals. Example of drug prescription.
36. Non-glycoside inotropic agents: mechanisms of action, indications for use, side effects. Example of drug prescription.
37. Principles of drug therapy for chronic heart failure. The main groups and drugs, mechanisms of action, side effects.
38. Anticoagulants: classification, mechanisms of action, a comparative characteristic of anticoagulants of direct and indirect action, indications for use, side effects. Example of drug prescription.
39. Antiaggregants (antiplatelet drugs): classification, indications for use, side effects. Example of drug prescription.
40. Drugs affecting fibrinolysis: classification, mechanisms of action, indications for use, side effects. Example of drug prescription.
41. Sedative-hypnotics. Benzodiazepine derivatives: mechanism of action, pharmacological effects. Differences between barbiturates, benzodiazepines, zolpidem and buspirone. Example of drug prescription.
42. Benzodiazepines: indications for use, side effects. Specific antagonist of benzodiazepines. Example of drug prescription.
43. Antiepileptic drugs and mechanisms of action. Drugs for epileptic status. Example of drug prescription.
44. Antiparkinsonic drugs: mechanisms of action. Drugs that cause schizophrenia-like symptoms. Example of drug prescription.
45. Types of opioid receptors. Classification of opioid analgesics. Mechanism of action of tramadol. Prescribe tramadol.
46. Pharmacological effects of morphine. The mechanism of its analgesic action. Prescribe morphine.
47. Opioid analgesics: indications for use, side effects. Specific antagonists of opioid receptors. Example of drug prescription.
48. Typical antipsychotic drugs. Pharmacological effects. Example of drug prescription.
49. Atypical antipsychotics. Their main differences from typical antipsychotics. Example of drug prescription.
50. Antidepressants: classification, mechanisms of action, side effects. Example of drug prescription.
51. Inhaled general anesthetics. The concept of minimal alveolar concentration (MAC).
52. General anesthetics. Features of nitrous oxide, halothane, thiopental, ketamine.
53. Local anesthetics: classification, mechanism of action, side effects. Application for different types of local anesthesia.
54. Glucocorticoids. Mechanisms of anti-inflammatory, immunosuppressive and anti-allergic action. Indications and contraindications to the prescription of drugs. Example of natural glucocorticoid prescription.
55. Glucocorticoids: effects, side effects of prolonged glucocorticoid therapy. Example of synthetic glucocorticoid prescription.
56. Non-steroidal anti-inflammatory drugs: classification, mechanisms of action, pharmacological effects, indications for prescribing medications, side effects and contraindications. Example of drug prescription.
57. Immunosuppressive drugs: classification, mechanisms of action, pharmacological effects, indications, side effects.
58. Antiallergic agents: classification, mechanisms, pharmacological effects, indications, side effects. Example of antihistaminic drug prescription.
59. Thyroid and antithyroid drugs: classification, mechanisms, pharmacological effects, indications, side effects. Prescribe tiamazole.
60. Insulins, insulin analog and oral hypoglycemic drugs: mechanisms, pharmacological effects, indications, side effects. Prescribe regular insulin or insulin analog.
61. Sex hormones as drugs: classification, mechanisms, pharmacological effects, indications, side effects.
62. Bronchodilators: classification, mechanisms of action, pharmacological effects, indications, side effects. Example of drug prescription.
63. Drugs used to control bronchial asthma: mechanisms, pharmacological effects, indications, side effects. Example of drug prescription.
64. Drugs for peptic ulcer: mechanisms, pharmacological effects, indications, side effects. Example of drug prescription.
65. Drugs used in emergency: anaphylactic shock; hypoglycemic coma; hyperglycaemic coma; poisoning with iron.
66. Antibiotics. Basic principles of antibiotic therapy. Mechanisms of formation of resistance to antibiotics. Side effects of antibiotics.
67. β-lactam antibiotics. Penicillins: biosynthetic and semi-synthetic, mechanisms of antimicrobial action, antimicrobial spectra, side effects. Example of drug prescription.
68. β-lactam antibiotics. Cephalosporins and carbapenems. Mechanisms of antimicrobial action, antimicrobial spectra, side effects. Example of drug prescription.
69. Bacteriostatic antibiotics. Macrolides, lincosamides, tetracyclines and chloramphenicol. Mechanisms and spectra of antimicrobial action, side effects. Example of drug prescription.
70. Bactericidal antibiotics. Aminoglycosides, vancomycin and polymyxines. Mechanisms and spectra of antimicrobial action, side effects. Example of drug prescription.
71. Synthetic antimicrobial agents. Sulfonamides: mechanisms and spectra of antimicrobial action of sulfonamides and co-trimoxazole, indications and side effects. Example of drug prescription.
72. Synthetic antimicrobial agents. Fluoroquinolones, nitrofurans and metronidazole. Mechanisms and spectra of antimicrobial action, indications for use and side effects. Example of drug prescription.
73. Anti-TB drugs. Classification, mechanisms of action, side effects. Prescribe isoniazid.
74. Antiviral drugs. Classification, mechanisms of antiviral action, features of application and side effects. Example of drug prescription.
75. Synthetic anticancer agents. Alkylating agents and antimetabolites. Mechanisms of action, side effects. Example of drug prescription.
76. Natural anticancer agents. Anticancer antibiotics, mitotic poisons, hormones and their antagonists. Mechanisms of action, side effects. Example of drug prescription.
77. Targeted anticancer drugs. Tyrosine kinase inhibitors, monoclonal antibodies (MABs): mechanism of action. Example of drug prescription.
78. Anti-protozoal agents. Classification, mechanisms of antiprotozoal action and side effects. Example of drug prescription.