

QUESTIONS FOR THE FINAL EXAM IN PHARMACOLOGY

Section 1. Medical Prescription. General Pharmacology

1. Medical prescription. Define the terms. drug substance, drug delivery, pharmaceutical form, medical product.
2. Medical prescription. General rules of drug prescribing, forms of prescriptions.
3. Medicinal forms. Types of medical forms, peculiarities of preparation and prescription order. Requirements for injection molds.
4. Definition of pharmacology, its place among other medical and biological sciences.
5. The origin and formation of experimental pharmacology, the development of pharmacology in Ukraine and other countries.
6. Basic principles and methods of testing of new medicinal substances. Pre-clinical and clinical studies (phases I-IV). The concept of placebo. Functions of the State Pharmacological Center of the Ministry of Health of Ukraine. Ukrainian laws about drugs.
7. The concept of pharmacokinetics.
8. Ways of introduction and removal of medicinal substances from the body, drugs absorption and distribution in the body, the main types of biotransformation.
9. Basic pharmacokinetic parameters (absorbtion rate, half-life, concentration, clearance).
10. Pharmacokinetics peculiarities depending from patient's age.
11. Dose, types of doses.
12. The concept of pharmacodynamics.
13. Receptors (agonists, antagonists).
14. Types and methods of drug action.
15. Dependence of the pharmacological effect from the properties of mediel products (chemical structure, physical and chemical properties, their doses and number of administration).
16. Dependence of the pharmacological effect from the age and sex of the patient. Peculiarities of the child's organism reaction to the drug. Principles of drug dosing in pediatrics and heriatrics.
17. Values of climatic and anthropogenic factors for the pharmacological action.
18. Dependence of the drug action from the physiological characteristics of the organism and pathological conditions.
19. Concept of pharmacogenetics and chronopharmacology.
20. Peculiarities of drug action in repeated administration. Material and functional cumulation, tolerance or addiction, mental and physical dependence. Withdrawal.
21. Combined action of drugs (synergism and antagonism).
22. Drug safety.
23. Side effects of drugs. Types of side effects. Intolerance. Idiosyncrasy. Drug allergy. Mutagenic, teratogenic, embryotoxic, fetotoxicity, carcinogenic effect.

Section 2. Pharmacology of drugs acting on peripheral nervous system

24. Principles of classification of local anesthetics, mechanism of action. Indications for administration, side effects.
25. Pharmacology of astrigents. Mechanism of action, indications for administration. Farmacological characteristic of drugs.
26. General characteristics of coating drugs. Mechanism of action, indications for administration.
27. Classification of adsorbing drugs. Mechanism of action. Indications for administrations. Coal Activated charcoal and synthetic sorbents.
28. Classification of irritating drugs. Mechanism of action. Effects on the skin and mucus membranes. Indications for administration.
29. Principles of classification of drugs acting on autonomic nervous system.
30. Classification of drugs acting on cholinergic neurotransmission. M- and N- cholinomimetic drugs.
31. Classification of indirect cholinomimetics. Mechanism of action, pharmacological effects, indications, side effects.
32. Peculiarities of action of organophosphate compounds. Acute organophosphate poisoning: signs and assistance measures. Pharmacology of OPC.

33. Classification and pharmacological characteristics of M-cholinomimetics. Influence on organs and systems. Indications for administration.
34. Acute muscarinic poisoning. Assistance measures, antidote therapy.
35. N-cholinomimetic drugs.
36. Pharmacological effects of nicotine. Smoking as a medical and social problem. Drugs used to avoid tobacco withdrawal.
37. M-cholino blocking drugs. Pharmacological characteristics of atropine sulfate. Indications for administration.
38. Acute poisoning with atropine and atropine containing plants. Assistance measures
39. General characteristics of N-cholino blocking drugs. Classification of ganglionic blockers. Mechanism of action. Pharmacological effects, indications for administration, side effects.
40. Principles of classification of muscle relaxants. Pharmacokinetics, pharmacodynamics of tubacurarine chloride. Indications for administration, side effects.
41. Classification of drugs affecting adrenergic neurotransmission.
42. Pharmacological characteristic of adrenomimetics. Pharmacokinetics, pharmacodynamics of adrenaline hydrochloride. Indications for administration.
43. Comparative characteristics of adrenomimetics. Side effects.
44. Classification of adrenergic blocking drugs. Peculiarities of α -blockers, mechanism of action and indications for administration.
45. Pharmacological effects of β -adrenoblockers. Comparative characteristics of drugs. Intrinsic sympathomimetic activity.
46. Pharmacology of sympatholitics. Mechanism of action and indications for administration, side effects.

Section 3. Pharmacology of drugs affecting central nervous system

47. Classification of general anaesthetics.
48. History of anaesthesia.
49. Types of anesthesia. Requirements for anesthesia. Theories of anesthesia.
50. Classification of Drugs for Inhalation Anesthesia. Comparative characteristics of drugs, side effects. Combined use of anesthetic preparations with other groups of drugs.
51. Classification of Drugs for Non-Inhalation Anesthesia. Comparative characteristics of drugs.
52. Premedication, induction and maintenance of anesthesia, combined anesthesia.
53. Pharmacology and toxicology of ethyl alcohol, use in clinical practice.
54. Acute and chronic poisoning with alcohol, assistance measures. Principle of treatment of alcoholism.
55. Classification of hypnotic drugs. General characteristics of hypnotics, possible mechanisms of action.
56. Comparative characteristics of hypnotics of different groups. Indications for administration, side effects.
57. Acute poisoning with barbiturates, assistance measures.
58. Antiepileptic drugs. Classification, comparative characteristics, side effects of antiepileptic drugs.
59. Antiparkinsonian drugs. Classification. Mechanisms of action. Clinical use.
60. Opioid analgesics. Classification by chemical structure, origin and affinity for opiate receptors. Mechanism of action
61. Pharmacology of morphine hydrochloride. Effect of the drug on the central nervous system. Characteristics of opioid analgesics. Indications for administration. Side effects.
62. Acute poisoning with opioid analgesics. Clinical signs and assistance measures.
63. Drug dependence to opioid analgesics
64. Non-narcotic analgesics Classification, general pharmacological characteristics of group. Mechanisms of action. Pharmacological characteristics of drugs.
65. Comparative characteristics of non-narcotic analgesics.
66. Psychotropic drugs. General characteristic.
67. Neuroleptics. Principles of classification. The mechanism of antipsychotic action of neuroleptics.

68. Pharmacological effects of aminazine.
69. Neuroleptics, indications for administration, side effects of neuroleptics. Combined use with drugs from other pharmacological groups.
70. Neuroleptanalgesia.
71. Pharmacology of tranquilizers. Classification. Mechanism of tranquilizing action, the concept of benzodiazepine receptors.
72. Comparative characteristics of tranquilizers.
73. Indications and contraindications for administration of tranquilizers, side effects. Drug addiction.
74. Combined use of tranquilizers with drugs from other pharmacological groups. Ataralgezia.
75. Pharmacology of lithium salts. Pharmacokinetics and pharmacodynamics, indications. Side effects. Acute poisoning with lithium salts.
76. Classification of sedatives.
77. Pharmacology of bromides. Indications. Side effects.
78. Bromism: clinical signs, treatment and prevention.
79. Sedative herbal medicinal drugs.
80. Psychomotor stimulators. General characteristics.
81. Caffeine benzoate sodium. Pharmacokinetics and pharmacodynamics, indications, side effects.
82. Psychodysleptics and amphetamines. Formation of dependence, social significance.
83. Pharmacology of antidepressants. Classification of antidepressants by mechanism of action and chemical structure. Comparative characteristic. Side effects.
84. Classification of nootropic drugs. Possible mechanisms of action. Indications. Pharmacological characteristics of drugs.
85. Adaptogens and actoprotectors. Indications. Main properties and comparative characteristics.
86. Pharmacology of analeptics. Classification, characteristics, indications.
87. Drugs used in Alzheimer's Disease.
88. Drugs used for the treatment of migraine attacks.
89. Principles of combined use of drugs for the treatment of migraines.
90. Use of agonists and antagonists of various subtypes of serotonin receptors (5-HT₂, 5-HT_{1D}) for the treatment of migraines (sumatriptan, metsergid).

Section 4. Pharmacology of drugs that affect the metabolism, inflammation, immune processes

91. Pharmacotherapy with vitamin preparations.
92. Classification of vitamin preparations.
93. Characteristics of water-soluble vitamin preparations. Indications, side effects. Bioflavonoids, coenzymes.
94. General characteristics of fat-soluble vitamins. Indications and contraindications.
95. Side effects of fat-soluble vitamin preparations.
96. Multivitamin preparations.
97. Antivitamins.
98. Classification of enzyme preparations. Mechanism of action and indications.
99. Combined enzyme preparations. Indications for administration.
100. General characteristics of enzyme inhibitors. Classification. Indications and contraindications.
101. Hormonal preparations of the hypothalamus and pituitary gland.
102. Mechanism of action of corticotropin, indications, side effects. Synthetic analogues of corticotropin.
103. Pharmacological characteristic of gonadotropic hormonal preparations.
104. Pharmacodynamics of posterior part of the pituitary gland drugs. Indications.
105. Pharmacology of hormonal preparations of the thyroid gland. Antithyroid drugs. Indications and contraindications, side effects.
106. Calcitonin preparations. Indications for administration.
107. Hypoglycemic drugs. Classification of hypoglycemic agents.
108. Pharmacokinetics, pharmacodynamics, indications and contraindications for insulin administration. Side effect. Management of hyperglycemic coma.

109. Overdose of insulin, management of hypoglycemic coma.
110. Long-acting insulin preparations.
111. Synthetic antidiabetic drugs. Classification, mechanism of action, indications. Comparative characteristics, side effects.
112. Hormonal preparations of glucocorticoids. Pharmacological effects, indications, contraindications, dosage regimen. Comparative characteristics. Side effects of glucocorticoids.
114. Sex hormones. Classification of sex hormones. General characteristics of female sex hormones.
115. Mechanism of action and indications for the use of estrogens, antiestrogenic drugs, gestogene preparations, antigestogens.
116. Side effects of female sex hormone preparations and their antagonists.
117. Contraceptive drugs. Classification, principles of combination, indications and contraindications, side effects. Comparative characteristics of contraceptive drugs.
118. Male sex hormone preparations. Pharmacological characteristics. Indications, side effects.
119. Antagonists of androgenic hormones.
120. Anti-allergic drugs.
121. Classification and general characteristics of antiallergic drugs.
122. Drugs used for treatment of immediate-type hypersensitivity.
123. Pharmacology of antihistaminic drugs (dimedrol, suprastin, fenkarol, diazolin, loratadine, diprazine, desloratydine).
124. Indications for cromolyn sodium, ketotifen.
125. Principles of assistance in anaphylactic shock. Drugs used for delayed type of hypersensitivity.
126. Pharmacology of immunosuppressants (cytostatic drugs, glucocorticoids).
127. Drugs affecting immune processes.
128. Drugs affecting immune system.
129. Classification of immunostimulants.
130. Pharmacology of thymus preparations (thymalin), leukopoiesis stimulants (sodium nucleate, methyluracil), interferons and vaccines.
131. Immunosuppressive drugs (antimetabolites, alkylating agents, glucocorticoids, enzyme preparations). Indications, side effects.
- Section 5. Pharmacology of drugs affecting major organs and systems**
132. Modern classification of antihypertensive drugs.
133. First line antihypertensive drugs.
134. Second line antihypertensive drugs.
135. The main principles of combination of antihypertensive drugs .
136. Comparative pharmacology of groups of antihypertensive drugs, onset of their antihypertensive action.
137. Treatment of hypertensive crisis .
138. Angioprotective drugs. Pharmacokinetics and pharmacodynamics of angioprotectives.
139. Drugs improving cerebral microcirculation.
140. General principles of treatment and prophylaxis of cerebral blood flow insufficiency.
141. Clinical use of antiplatelets, anticoagulants, Ca-channel blockers for the treatment and prophylaxis of cerebral bloodflow insufficiency.
142. Clinical use of ergoalkaloids, vinca alkaloids, GABA derivatives, purine derivatives for the treatment and prophylaxis of cerebral bloodflow insufficiency.
143. Neuroprotective agents.
144. Classification of cardiotonic drugs (positive inotropic).
145. Pharmacokinetics and pharmacodynamics of cardiac glycosides. Clinical indications, adverse effects.
146. Acute and chronic intoxication with cardiac glycosides. Its treatment and prophylaxis.
147. Pharmacology of non-glycoside cardiotonic agents.
148. Classification of anti-arrhythmic drugs. Pharmacology of anti-arrhythmic drugs.
149. Comparative characterization of anti-arrhythmic drugs, their clinical use.
150. Classification of antianginal drugs.

151. Pharmacokinetics and pharmacodynamics of nitroglycerin.
 152. Pharmacology of calcium channel blockers..
 153. Clinical use of β -adrenoblockers for the treatment of angina pectoris.
 154. Vasodilating and cardioprotective agents. Clinical use, adverse effects.
 155. Pharmacology of lipid-lowering drugs.
 156. General principles of treatment of myocardial infarction.
 157. Respiratory stimulants. Classification, pharmacokinetics and pharmacodynamics, clinical use.
 159. Antitussive drugs. Classification, drugs characterization, adverse effects.
 160. Pharmacology of expectorants.
 161. Drugs stimulating synthesis of surfactant.
 162. Pharmacology of broncholytic agents. Clinical use, adverse effects.
 163. Drugs used to treat pulmonary edema.
 164. Classification of drugs affecting appetite. General characterization of drugs.
 165. Emetic drugs. Mechanism of action, clinical use.
 166. Pharmacology of antiemetic drugs. Clinical use. Adverse effects.
 167. Classification of drugs affecting gastric acid secretion.
 168. Pharmacology of drugs increasing gastric acid secretion.
 169. Pharmacology of drugs decreasing gastric acid secretion.
 170. Pharmacological approaches to the treatment of peptic ulcer and hyperacidic gastritis.
 171. Pharmacology of H₂-blockers, antimuscarinic drugs and proton pump inhibitors.
 172. Pharmacology of gastroprotective agents.
 173. Antihelicobacter drugs.
 174. Drugs affecting excretory function of the pancreas. Clinical use.
 175. Drugs stimulating bile secretion. Classification, clinical use.
 176. Hepatoprotective agents and drugs used to treat cholelithiasis.
 177. Pharmacology of laxatives.
 178. General characterization of antidiarrheal drugs.
 179. Drugs affecting blood.
 180. Drugs stimulating erythropoiesis. Pharmacokinetics, pharmacodynamics, clinical use, adverse effects.
 189. Pharmacology of drugs stimulating leukopoiesis.
 190. Pharmacology of drugs inhibiting leukopoiesis. Clinical use, adverse effects.
 191. Classification of drugs used to treat and prevent thrombosis.
 192. Classification of anticoagulants. Pharmacokinetics, pharmacodynamics, clinical use, adverse effects.
 193. General characterization of fibrinolytic agents. Clinical indications. Adverse effects.
 194. Classification of coagulants. Pharmacokinetics, pharmacodynamics, clinical use, adverse effects.
 195. Classification of antiplatelet drugs. Pharmacokinetics, pharmacodynamics, clinical use, adverse effects.
 196. Classification of phlebotropic drugs.
 197. Pharmacological characterization of phlebotropic drugs.
 198. Classification of diuretics. Pharmacokinetics, pharmacodynamics, clinical use, adverse effects.
 199. Forced diuresis.
 200. Pharmacology of drugs used to treat gout.
 201. Pharmacological characterization of drugs increasing contractility of the uterus (uterotonic).
 202. Drugs used to terminate uterine bleeding.
 203. Drugs decreasing tone and contractility of the uterus.
- Section 6. Pharmacology of chemotherapeutic agents. General principles of management of acute drug poisoning**
204. General characterization of antiseptic and disinfectant drugs.
 205. Pharmacology of halogens.
 206. Pharmacology of oxidizing agents.

207. Antiseptic and disinfectant action of acids and alkali.
208. Pharmacology of salts of heavy metals. Acute poisoning with salts of heavy metals: symptoms and treatment.
209. Pharmacology of organic antiseptics and disinfectants. Aromatic derivatives.
210. Mechanism of action of phenol group. Adverse effects. Acute phenol poisoning.
211. Pharmacology of nitrofurans.
212. Pharmacological characterization of dyes.
213. Aliphatic antiseptics and disinfectants. Pharmacology of formaldehyde.
214. Antimicrobial action of ethanol.
215. Pharmacology of detergents.
216. Classification of chemotherapeutic agents. Antibiotics and their spectrum of action.
217. History of antibiotics discovery and development.
218. Classification of antibiotics according to their chemical structure, antimicrobial spectrum and mechanism of action.
219. Penicillins. Classification. Mechanism and spectrum of action. Pharmacological characterization of drugs.
220. Classification of cephalosporins.
221. Mechanism and spectrum of action of cephalosporins.
222. Comparative characterization of cephalosporins. Clinical use. Adverse effects.
223. Macrolide and azalide antibiotics. General characterization. Mechanism and spectrum of action. Clinical use. Adverse effects.
224. Tetracyclins. Pharmacokinetics. Mechanism and spectrum of action. Clinical use. Adverse effects. Contraindications.
225. Phenicol. Mechanism and spectrum of action. Clinical use. Adverse effects.
226. Pharmacology of aminoglycosides. Classification. Comparative characterization. Mechanism and spectrum of action. Clinical use. Adverse effects.
227. Polymixins. Mechanism and spectrum of action. Clinical use. Adverse effects.
228. General principles of antibiotic therapy.
229. Adverse effects of antibiotics and their prophylaxis.
300. Sulphonamides classification.
301. Pharmacokinetics and pharmacodynamics of sulphonamides. Clinical indications. Adverse effects and their prophylaxis. Comparative characterization of drugs.
302. Combined sulphonamides.
303. Quinolones. Classification. Mechanism and spectrum of action. Clinical use. Adverse effects. Comparative characterization of fluoroquinolones.
204. Antifungal drugs. Classification.
205. Pharmacological characterization of the main groups of antifungal drugs. Clinical use. Adverse effects.
206. Antiviral drugs. Classification.
207. Pharmacological characterization of drugs used against influenza virus.
208. Drugs used to treat herpes viral infections.
209. Drugs used to treat HIV infection.
210. Drugs used to treat syphilis.
211. Clinical use of antibiotics and bismuth preparations in the treatment of syphilis.
212. Classification of drugs used to treat tuberculosis.
213. Pharmacokinetics and pharmacodynamics of isonicotinic acid hydrazide. Adverse effects and their prophylaxis.
214. Pharmacology of rifampicin. Adverse effects.
215. Pharmacological characterization of antituberculous drugs from different groups. Adverse effects.
216. Classification of antiprotozoal drugs.
217. Antimalarial drugs. Basic principles of treatment and prophylaxis of malaria. Classification. Mechanism of action.
218. Pharmacotherapy of malarial coma.

219. Drugs used to treat trichomoniasis. Pharmacology of metronidazole.
220. Drugs used to treat Chlamydia infection.
221. Classification of amebicidal drugs. Characterization of drugs.
222. Drugs used to treat giardiasis.
223. Characterization of drugs used to treat toxoplasmosis.
224. Anthelmintic drugs. Classification.
225. Pharmacological characterization of drugs used to treat intestinal helminthiases.
226. Pharmacological characterization of drugs used to treat systemic helminthiases.
227. Antineoplastic (anticancer) agents. Classification. General characterization.
228. Radioisotope agents. Clinical indications. Adverse effects.
229. Acids and alkali. Local and systemic effects of acids and alkali. Clinical indications. Acute poisoning with acids and alkali, its treatment.
230. Classification of alkali and alkaline-earth metals.
231. Sodium preparations. Pharmacodynamics. Clinical use.
232. Potassium preparations. Pharmacodynamics. Clinical use.
233. Magnesium preparations. Pharmacokinetics. Pharmacodynamics. Relation between pharmacological effect and route of administration. Clinical indications.
234. Calcium preparations. Pharmacological effects. Clinical indications, routes of administration.
235. Plasma expanders. General characterization. Clinical use.
236. Drugs for parenteral nutrition.
237. Basic principles of management of acute drug poisoning.
238. Causes of acute drug poisoning.
239. Symptoms of acute drug poisoning caused by different pharmacological groups.
240. Methods of active detoxification.
241. Antidotes. Types of antidote therapy.
242. Pharmacology of antidotes.
243. Principles of symptomatic treatment of acute drug poisoning.