****  AL-FARABI KAZAKH NATIONAL UNIVERSITY

Faculty of Medicine and Healthcare, Higher School of Medicine

Department of Fundamental Medicine

**PROGRAM**

**of midterm 1 on discipline**

**MZiB2216 "Mechanisms of Defense and Disease (medical genetics,**

**microbiology, pharmacology)"**

**Main questions:**

1. Formulation. Definition. The concept of a medicinal substance, a dosage form and a medicinal preparation
2. Classification of dosage forms (by consistency, method of administration). Official and main medicinal forms.
3. Recipe: definition, rules of prescription in prescription drugs, features of prescribing poisonous, potent, narcotic drugs
4. The concept of solid dosage forms and their varieties. Dosing methods.
5. The concept of soft medicinal forms and their varieties.
6. Common volume units for measuring liquid dosage forms. Principles of calculation of doses in the preparation of solutions. Methods of expressing the concentration of solutions.
7. Liquid dosage forms
8. Dosage forms for injection. Requirements for them. Rules of prescription in the recipe.
9. Definition and objectives of general pharmacology. Main sections of pharmacology.
10. Pharmacokinetics of drugs, definition. Ways of drug administration.
11. Absorption of drugs from the injection site. Factors contributing to better absorption of medicinal substances.
12. Distribution of medicinal substances in the body. The importance of histohematological barriers in the distribution of drug substances.
13. Metabolism of medicinal substances in the body. Types of metabolic reactions of drugs
14. The role of microsomal liver enzymes in the metabolism of drugs. Induction and depression of microsomal enzymes.
15. Excretion of drugs and their metabolites. Elimination, the period of semi-elimination.
16. Pharmacodynamics of medicines, definition. The mechanism of action of drugs. The concept of specific receptors.
17. The essence of the receptor theory of mechanisms of action of drugs. Affinity, inner activity. Agonists, antagonists, mimetics and blockers of specific receptors.
18. Types of action of drugs (local, resorptive, reflex). Basic and non-basic pharmacological effects. The concept of the side effects of medicines.
19. Pharmacological and physiological factors affecting the magnitude of the pharmacological effect.
20. Genetic, biological and emotional factors affecting the magnitude of the pharmacological effect. The concept of a placebo.
21. Dose. Dependence of pharmacological effect on dose. Types of therapeutic doses: threshold, average and higher therapeutic dose. Latitude of the therapeutic effect of the drug.
22. Interaction of drugs with their combined use. Types of interaction: pharmaceutical, pharmacological. Synergism and antagonism of drugs.
23. Changes in the effect of drugs when they are repeated. Drug dependence (physical and mental). Adaptation (tolerance), sensitization, cumulation.
24. Toxic effects of medicines.
25. Construction and function of the cholinergic synapse. Types of cholinergic receptors. Effects of stimulation of M-cholinergic receptors and H-cholinergic receptors.
26. Classification of cholinergic drugs.
27. Anticholinesterase drugs (proserine, galantamine, physostigmine). Classification. Mechanism of action. Pharmacological properties. Application.
28. Sharp poisoning with anticholinesterase agents (and organophosphorus compounds). Symptoms of poisoning. Measures of assistance. Specific antidotes (dipiroxime, isonitrozine).
29. Features of pharmacodynamics of M-H-cholinomimetics. Mechanism of action of acetylcholine. Pharmacological properties.
30. M-cholinomimetics (acetylidine, pilocarpine). Differences from anticholinesterase agents. Pharmacological effects. Application.
31. M-cholinoblocking agents. Mechanism of action. Pharmacological properties of atropine (influence on the eye, cardiovascular system, glands, smooth muscles). Features of the action on the central nervous system. Indications for use.
32. Features of pharmacological action of scopolamine, platyphylline, gastrocepin, gomatropin. Comparative characteristics, indications for use. Side effects.
33. Acute poisoning with M-holinoblokatorami. Symptomatic of poisoning. Measures of assistance.
34. Influence of N-cholinomimetic agents on the cardiovascular and respiratory system. Application. Side effects.
35. Ganglion blockers. Mechanism of action. Effects of stimulation of sympathetic and parasympathetic ganglia. Indications for use. Side effects.
36. Miorelaxants. Classification. The mechanism of action of depolarizing and antidepolarizing agents.
37. The principle of the action of muscle relaxants. Indications for use Possible complications in their use. Antagonists of muscle relaxants.

**Preparations for the determination of group affiliation:**

Acetylcholine

Carbachol

Neostigmine

Physostigmine

Galantamine

Pilocarpine

Tacrine

Physostigmine

Pralidoxime

Nicotine

Lobeline

Atropine

Homatropine

Tropicamide

Hyoscine (Scopolamine)

Pirenzepine

Ipratropium bromide

Tubocurarine

Pancuronium

Pipecuronium

Atracurium

Suxametonium

Organophosphates

**Preparations for prescription writing**:

* Aceclydine - Aceslidinum (raster 0.2% 1 ml per amp.)
* Pilocarpine hydrochloride - Pilocarpini hydrochloridum (raster 1%, 2% and 4% 10 ml in fl.)
* Galanthamine hydrobromide-Galanthaminum hydrobromidum (raster 0.2% 1 ml per amp.)
* Atropine sulfate - Atropinum sulfas (rast-p 0.1% per 1 ml in amp, table 0.0005)
* Pirenzepine-Pirenzepinum (table 0.025 and 0.005 No. 20)

**Scale quality response**

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| **Evaluation** | **Criteria** | **Scale, points** |
| excellent | 1. all key aspects included and presented logically;  2. high accuracy (relevance, without redundancy) and consistent focus on question;  3. excellent integration of theoretical issues;  3. provision of relevant examples;  4. in-depth analysis and theoretical justification of given problem (if applicable), all key aspects identified and interpreted;  5. fluency in use of professional terminology | 90 - 100 |
| good | 1. all key aspects included and presented logically;  2. consistent focus on question with satisfactory accuracy, and relevance, and/or some redundancy;  3. satisfactory integration of theoretical issues;  3. lack of examples;  4. satisfactory analysis and theoretical justification of given problem (if applicable), most key aspects identified and interpreted;  5. correct use of professional terminology | 75 - 89 |
| satisfactory | 1. most key aspects included;  2. satisfactory focus on question - some lapses of relevance and/or noticeably redundancy;  3. theoretical issues presented without noticeably integration;  3. provision of unsuccessful examples or no examples;  4. some analysis and theoretical justification of given problem (if applicable), most key aspects identified and interpreted;  5. correct use of professional terminology | 50 - 70 |
| unsatisfactory (FX) | 1. most key aspects missed;  2. lack of focus on question - no relevance and notable redundancy;  3. some theoretical issues presented in someway;  3. no or irrelevant examples;  4. some analysis and theoretical justification of a given problem (if applicable), most key aspects missed;  5. lapses in use of professional terminology | 25 - 49 |
| failed | 1. most or all key aspects missed;  2. no focus on question, irrelevant information;  3. theoretical issues missed or superficial;  3. no or irrelevant examples;  4. no analysis and no theoretical justification of a given problem (if applicable), most key aspects missed;  5. lapses in use of professional terminology | 0-24 |

**Grading system**

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| --- | --- | --- | --- |
| **Оценка по буквенной системе** | **Цифровой эквивалент баллов** | **%** | **Оценка по традиционной системе** |
| А | 4,0 | 95-100 | excellent |
| А- | 3,67 | 90-94 |
| В+ | 3,33 | 85-89 | good |
| В | 3,0 | 80-84 |
| В- | 2,67 | 75-79 |
| С+ | 2,33 | 70-74 | satisfactory |
| С | 2,0 | 65-69 |
| С- | 1,67 | 60-64 |
| D+ | 1,33 | 55-59 |
| D- | 1,0 | 50-54 |
| FX | 0 | 25-49 | unsatisfactory |
| F | 0 | 0-24 |
| I  (Incomplete) | - | - | “Discipline is not completed”  *(not taken into account when calculating GPA)* |
| P  (Pass) | **-** | **-** | "Credit"  *(not taken into account when calculating GPA)* |
| NP  (No Рass) | **-** | **-** | «Fail»  *(not taken into account when calculating GPA)* |
| W  (Withdrawal) | - | - | "Failure to discipline"  *(not taken into account when calculating GPA)* |
| AW  (Academic Withdrawal) |  |  | Withdrawal for academic reasons  *(not taken into account when calculating GPA)* |
| AU  (Audit) | - | - | "Discipline is listened"  *(not taken into account when calculating GPA)* |
| certified |  | 30-60  50-100 | Certified (examined) |
| Not certified |  | 0-29  0-49 | Not certified |
| R (Retake) | - | - | Re-learning the discipline |