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БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ
КАФЕДРА ФАРМАКОЛОГИИ

ФАРМАКОЛОГИЯ

PHARMACOLOGY

Тесты
для специальности «Лечебное дело»

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PHARMACOKINETICS. BASIC CONCEPTS

1. **The increase in ionization of weak electrolytes causes GIT absorption to:**
   a) Increase; b) Decrease; c) Stay the same.
2. **Intramuscular injections provide high rate of absorption for:**
   a) Non-polar lipophilic drugs only;
   b) Polar hydrophilic drugs only;
   c) Both lipophilic and hydrophilic drugs.
3. **Half-elimination period:**
   a) Time is equal to one-half of a full elimination period;
   b) Time needed to decrease plasma concentration of a drug by 2 on the exponential part of a pharmacokinetic curve.
4. **To accelerate the excretion of weak bases by the kidneys, it's necessary to:**
   a) Alkalinize the urine; b) Acidify the urine; c) Maintain neutral pH.
5. **Extent of oral drug absorption determines*:***
   a) Clearance; d) Half-elimination period;
   b) Bioavailability; e) Elimination rate constant;
   c) Ionization constant; f) Volume of distribution.
6. **Volume of distribution indicates*:***
   a) The volume of body fluids in which drugs are distributed uniformly;
   b) The volume of fluid in which a drug distributes uniformly at a concentration equal to that of blood plasma;
   c) The volume of fluid in which a drug distributes uniformly at a concentration equal to that of tissue fluids;
   d) The volume of fluid in which a drug distributes uniformly at a therapeutic concentration.
7. **Total clearance is characteristic of*:***
   a) Drug absorption; c) Drug elimination;
   b) Drug distribution; d) Drug deposition.
8. **Principal mechanism of drug absorption from the GIT:**
   a) Active transport;
   b) Passive diffusion through a lipid barrier;
   c) Diffusion through aqueous pores and intercellular spaces;
   d) Microvesicular transport.
9. **Determinants of renal clearance:**
   a) Metabolic transformation; d) Tubular secretion;
   b) Glomerular filtration; e) Conjugation.
   c) Tubular reabsorption;

10. Which enteral routes of administration provide absorption into the systemic circulation bypassing or partially bypassing the liver?

a) Oral (swallow);
b) Sublingual;
c) Transbuccal;
d) Into the duodenum;
e) Rectal.

11. Indicate the determinants of hepatic clearance:

a) Rate of biotransformation reactions in the liver;
b) Liver blood flow;
c) Unbound fraction of a drug;
d) Bioavailability;
e) Volume of distribution.

12. The directions of biotransformation reactions in the liver are:

a) Decrease in hydrophilicity;
b) Increase in hydrophilicity;
c) Increase in activity;
d) Decrease in activity;
e) Increase in polarity;
f) Decrease in polarity.

13. Biotransformation of drugs gives metabolites*:*

a) Which are poorly reabsorbed across the renal tubule;
b) Which are highly reabsorbed across the renal tubule;
c) Which are poorly absorbed from the intestines;
d) Which are highly absorbed from the intestines;
e) Rapidly leave the organism;
f) Slowly leave the organism.

14. Oral bioavailability is determined by*:*

a) Extent of gastrointestinal absorption;
b) Plasma protein binding;
c) First pass liver metabolism;
d) Rate of distribution throughout the body;
e) Quality of pharmaceutical drug formulation.

15. Liver cirrhosis may alter the pharmacokinetics of drugs:

a) Decreases presystemic elimination;
b) Increases the free fraction of drugs in plasma;
c) Decreases drug clearance;
d) Increases half-elimination period ($T_{1/2}$);
e) Increases bioavailability;
f) Decreases the volume of distribution.

16. Features of rectal route of administration:

a) Is used only in clinics;
b) Is influenced by presence of digestive enzymes;
c) May be used in unconscious patients;
d) Drugs destroyed in the GIT can be applied;
e) Some fraction of a drug bypasses the liver;
f) Needs trained medical personnel.

17. Features of intravenous route:

a) Maximum accuracy of dosing;
b) Provides the highest possible bioavailability;
c) Fast onset of action;
d) Needs to sterilize drugs and adheres to aseptic techniques;
e) Plasma steady state concentration of a drug is achieved within 2 half-elimination periods.

18. Which dose of Drug M should be injected to a patient weighting 50 kg to rapidly achieve a plasma concentration of 30 mg/l (Vd = 0.1 l/kg)?

a) 150.0 mg; c) 450.0 mg; e) 900.0 mg;
b) 300.0 mg; d) 750.0 mg; f) 1500.0 mg.

19. Arrange the drugs in ascending order by intestinal absorption rate (pH = 7.2):

a) Weak acid A (pK = 3.5); c) Weak base C (pK = 8.2);
b) Weak acid B (pK = 5.2); d) Weak base D (pK = 7.2).

20. Arrange the drugs with different distribution patterns in ascending order by the loading doses needed to achieve plasma Css = 1 mg/ml (intravenous administration):

a) B (Vd = 2.0 l/kg); d) A (Vd = 0.2 l/kg);
b) C (Vd = 0.5 l/kg); e) D (Vd = 1.5 l/kg).
c) E (Vd = 4.0 l/kg);

PHARMACODYNAMIC

1. Intrinsic activity is:

a) Ability to bind to specific receptors;
b) Ability to stimulate specific receptors and cause an effect upon binding;
c) Ability to block specific receptors and cause an effect upon binding;
d) Ability to compete with endogenous ligands for specific receptors.

2. Drugs with low intrinsic activity are called:

a) Agonists-antagonists; c) Antagonists;
b) Partial agonists; d) Full agonists.

3. Drugs with high intrinsic activity are called:

a) Agonists-antagonists; c) Antagonists;
b) Partial agonists; d) Full agonists.

4. Drugs stimulating one receptor subtype and blocking another one are called:

a) Agonists-antagonists; c) Antagonists;
b) Partial agonists; d) Full agonists;

5. Drugs with no intrinsic activity are called:

a) Agonists-antagonists;
b) Partial agonists;
c) Antagonists;
d) Full agonists.

6. The measure of efficacy:

a) Maximum effective dose;
b) Maximum effect (Emax);
c) The dose that causes maximal effect;
d) Therapeutic range;
e) Therapeutic index.

7. Synergism is:

a) Enhanced effect of a drug combination;
b) Decreased drug effect after repeated administration;
c) Decreased effect of a drug combination;
d) Decreased effect of a drug after its prolonged application.

8. Potentiation is:

a) Sum of drug effects;
b) The enhancement of action of one drug by another drug that is inactive;
c) Enhanced effect of a drug after repeated administration;
d) Interaction resulting in an effect that is less than the sum of their individual effects.

9. Antagonism is:

a) Decreased effect after repeated drug administration;
b) The combined effect of two or more drugs is less than the sum of their individual effects;
c) The enhancement of action of one drug by another drug that is inactive;
d) Enhanced effect after dose reduction.

10. Repeated use of drugs leads to the following negative consequences:

a) Cumulation;
b) Tachyphylaxis;
c) Drug dependence;
d) Tolerance;
e) Idiosyncrasy.

11. Accumulation is:

a) A decreased sensibility to a drug following by repeated administration;
b) An increased sensibility to a drug following by repeated administration;
c) An enhanced response to a drug following by repeated administration that results from its cumulation in the body;
d) Unusual drug reactions resulting from congenital enzyme defects;
e) An enhanced biotransformation of a drug following by repeated administration.

12. It is needed 25 mg of diuretic A or 50 mg diuretic of B to increase daily urine output by 2 litres. Identify the correct statement:

a) Diuretic A is 2 times more effective than diuretic B;
b) Diuretic B is 2 times more effective than diuretic A;
c) Diuretic A is 2 times more potent (active) than diuretic B;

d) Diuretic B is 2 times more potent (active) than diuretic A;
e) Diuretics A and B are equipotent (active) but differ in efficacy.

13. It is established that ED50 value of diuretics A and B is 1.0 mg/kg. Besides, diuretic A increases daily urine output by 2 litres at the highest tested dose and diuretic B — by 1 litres. Identify the correct statement:

a) Diuretic A is 2 times more effective than diuretic B, potency (activity) is the same;
b) Diuretic B is 2 times more effective than diuretic A, potency (activity) is the same;
c) Diuretics A and B are equieffective but differ in potency (activity);
d) Diuretic B is 2 times more potent (active) than diuretic A;
e) Diuretics A and B are equieffective but differ in potency (activity).

14. What is tolerance?

a) Individual drug intolerance;
b) Decreased organism sensibility to drugs;
c) Increased organism sensibility to drugs;
d) Drug dependence.

15. Two drugs have opposite effects on the same receptor, it is called as:

a) Antidotism;
b) Physicochemical antagonism;
c) Physiologic antagonism;
d) Pharmacological antagonism;
e) Synergism.

16. Maximal effect is the measure of:

a) Potency (activity);
b) Efficacy;
c) Therapeutic index;
d) Safety;
e) Therapeutic range.

17. Which of these events appear only when drugs are used in combination?

a) Additive effect;
b) Antagonism;
c) Potentiation of action;
d) Sensibilization;
e) Tolerance;
f) Synergism;
g) Idiosyncrasy.

18. Arrange the drugs in descending order by potential hazard:

a) Drug A (TI = 900);
b) Drug B (TI = 10);
c) Drug C (TI = 50);
d) Drug D (TI = 300);
e) Drug E (TI = 100).

19. Arrange the drugs in ascending order by safety. LD50 is 500 mg for each, but ED50 values differ:

a) Drug A (ED50 = 0.01 mg);
b) Drug B (ED50 = 0.1 g);
c) Drug C (ED50 = 5 mg);
d) Drug D (ED50 = 50 mg).

20. Arrange the diuretic drugs in ascending order by efficacy:

a) Drug A (ED50 = 6.0 mg/kg – Emax = 1000 ml/day);
b) Drug B (ED50 = 80 mcg/kg – Emax = 3.0 l/day);
c) Drug C (ED50 = 0.2 mg/kg – Emax = 2.0 l/day);
d) Drug D (ED50 = 0.01 g/kg – Emax = 500 ml/day);
e) Drug E (ED50 = 10 mcg/kg – Emax = 4.0 l/day).

21. Arrange the diuretic drugs in ascending order by potency (activity):

a) Drug A (ED50 = 0.2 mg/kg – Emax = 2.0 l/day);
b) Drug B (ED50 = 80 mcg/kg – Emax = 3.0 l/day);
c) Drug C (ED50 = 10 mcg/kg – Emax = 4.0 l/day);
d) Drug D (ED50 = 0.01 g/kg – Emax = 500 ml/day);
e) Drug E (ED50 = 6.0 mg/kg – Emax = 1000 ml/day).

CHOLINOMIMETIC AND ANTICHOLINESTERASE DRUGS

1. Localization of N-cholinoreceptors:

a) Autonomic ganglions;
b) Postganglionic endings of parasympathetic nerves;
c) Endings of efferent nerve;
d) Chromaffin tissue of adrenal glands;
e) Sino-carotid zone.

2. N-cholinergic receptor is:

a) G-protein-coupled receptor;
b) Ligand-gated channel;
c) Transmembrane protein;
d) Nuclear receptor.

3. M-cholinergic receptor is:

a) G-protein-coupled receptor;
b) Ligand-gated channel;
c) Transmembrane protein;
d) Nuclear receptor.

4. After interaction with the receptor, acetylcholine is:

a) Enzymatically degraded in the synaptic cleft;
b) Eliminated from the body by the kidneys in unchanged form;
c) Metabolized primarily in the liver;
d) Enzymatically degraded in the presynaptic endings.

5. Acetylcholine is destroyed by:

a) Acetylcholinesterase;
b) Acetylcholinesynthase;
c) Acetylcholinearomathase;
d) Acetylcholine dehydrogenase;
e) Is not destroyed by enzymes.

6. Localization of M-cholinergic receptors:

a) Cells of effector organs near the end of postganglionic cholinergic fiber;
b) Neurons of sympathetic ganglions;

c) Neurons of parasympathetic ganglions;
d) Neurons of the spinal cord;
e) Carotid sinus;
f) Chromaffin cells of adrenal medulla;
g) Skeletal muscles.

7. Select M-cholinomimetics:

a) Pilocarpine;
b) Neostigmine;
c) Acetylcholine chloride;
d) Aceclidine;
e) Carbachol;
f) Pyridostigmine bromide;
g) Bethanechol.

8. Select N-cholinomimetics:

a) Nicotine;
b) Cytisine;
c) Pilocarpine;
d) Aceclidine;
e) Bethanechol.

9. Select M, N-cholinomimetics of direct action:

a) Acetylcholine chloride;
b) Carbachol;
c) Neostigmine;
d) Pyridostigmine bromide;
e) Donepezil.

10. Select M, N-cholinomimetics with indirect action:

a) Acetylcholine chloride;
b) Carbachol;
c) Neostigmine;
d) Pyridostigmine bromide;
e) Donepezil.

11. Select Anticholinesterase drugs:

a) Neostigmine;
b) Pyridostigmine bromide;
c) Aceclidine;
d) Edrophonium chloride;
e) Carbachol;
f) Armin;
g) Donepezil.

12. Irreversible cholinesterase inhibitors are:

a) Pyridostigmine bromide;
b) Armin;
c) Donepezil;
d) Organophosphorous compounds;
e) Neostigmine.

13. Effects of acetylcholine are:

a) Decreased heart rate;
b) Decreased secretion of bronchial glands and digestive glands;
c) Increased secretion of bronchial glands and digestive glands;
d) Contraction of bronchial muscles;
e) Increased intestine motility;
f) Hypersecretion of sweat glands;
g) Hyporsecretion of sweat glands.

14. The mechanism of reduction of ocular hypertension after pilocarpin application is:

a) Opening of the venous sinus, increased outflow of intraocular fluid from the anterior chamber of the eye;

b) Inhibition of the carbonic anhydrase and decreased production of intraocular fluid.

15. Effect of M-cholinomimetics on the bronchi is:

a) Dilation of bronchi; c) Have no effect on the bronchi.

b) Bronchospasm;

16. Effect of M-cholinomimetics on heart rate is:

a) Increased heart rate; c) Have no effect on heart rate.

b) Decreased heart rate;

17. Effects of M-cholinomimetics are:

a) Pupil dilatation (mydriasis);

b) Contraction of the pupil (miosis);

c) Decreased intraocular pressure;

d) Spasm of accommodation;

e) Paralysis of accommodation.

18. Effects of pilocarpine are:

a) Decreased heart rate;

b) Increase in the secretion of exocrine glands;

c) Decreased secretion of exocrine glands;

d) Miosis;

e) Reduction of the tone of the urinary bladder;

f) Decreased intraocular pressure;

g) Increased intraocular pressure;

h) Spasm of accommodation;

i) Paralysis of accommodation;

j) Mydriasis.

19. Aceclidine:

a) Increases the intraocular pressure;

b) Increases the intestinal tone;

c) Increases the secretion of the digestive glands;

d) Dilates the bronchi;

e) Causes the spasm of accommodation.

20. Acetylcholine chloride:

a) Decreases the intestinal tone;

b) Increases the secretion of the exocrine glands;

c) Increases the secretion of the bronchial glands;

d) Decreases the heart rate;

e) Causes bronchospasm.

21. Anticholinesterase drugs:

a) Inhibit the degradation of acetylcholine;
b) Activate the destruction of acetylcholine;
c) Stimulate the release of acetylcholine;
d) Inhibit acetylcholine release.

22. How do anticholinecterase drugs influence the action of acetylcholine?

a) Potentiate; b) Suppress; c) Make it shorter; d) Protract.

23. Effects of anticholinesterase drugs on skeletal muscle are:

a) Facilitation of neuromuscular transmission;
b) Interruption of neuromuscular transmission;
c) They do not act on neuromuscular transmission;
d) Raising of muscle tone;
e) Reduction of muscle tone;
f) They do not act on muscle tone.

24. Effects of pyridostigmine:

a) Decreased secretion of digestive glands;
b) Bronchospasm;
c) Frequent urination;
d) Increased heart rate;
e) Decreased secretion of exocrine glands;
f) Facilitation of neuromuscular transmission;
g) Interruption of neuromuscular transmission;
h) Raising of muscle tone;
i) Reduced muscle tone;
j) No effect on muscle tone;
k) Decreased heart rate;
l) Depression of the A-V nodal activity;
m) Decreased cardiac output;
n) Increased A-V nodal activity;
o) Increased cardiac output.

25. Indications for the anticholinesterase drugs:

a) Myasthenia;
b) Glaucoma;
c) Renal colic;
d) Intestinal atony;
e) Asthma;
f) Atony of urinary bladder.

26. Effects of nicotine:

a) Initiation of the inspiratory center;
b) Increase in the intestinal tone;
c) Increase in the heart rate;
d) Suppression of the respiratory center;
e) Decrease in the intestinal tone.

27. Drugs that can be applied in case of intestinal and urinary bladder atony:

a) Armin;
b) Pilocarpine;
c) Pyridostigmine bromide;
d) Donepezil;
e) Neostigmine;
f) Aceclidine;
g) Edrophonium chloride.

28. Drugs that are used for the treatment of glaucoma:

a) Armin;
b) Pilocarpine;
c) Pyridostigmine bromide;
d) Donepezil;
e) Neostigmine;
f) Aceclidine;
g) Edrophonium chloride.

CHOLINERGIC ANTAGONIST (ANTICHOLINERGIC) DRUGS

1. Pirenzepine is:

a) Antagonist of M_1 receptors;
b) Antagonist of M_2 receptors;
c) Antagonist of M_3 receptors;
d) Agonist of M_1 receptors;
e) Non-selective antagonist of M-receptors.

2. Atropine is:

a) Antagonist of M_1 receptors;
b) Antagonist of M_2 receptors;
c) Antagonist of M_3 receptors;
d) Agonist of M_2 receptors;
e) Non-selective antagonist of M-receptors.

3. Darifenacine is:

a) Antagonist of M_1 receptors;
b) Antagonist of M_2 receptors;
c) Antagonist of M_3 receptors;
d) Agonist of M_3 receptors;
e) Non-selective antagonist of M-receptors.

4. Pipecuronium bromide is:

a) Antagonist of N_M receptors;
b) Antagonist of M_2 receptors;
c) Antagonist of M_3 receptors;
d) Agonist of M_1 receptors;
e) Antagonist of N_N receptors.

5. Trimethaphan is:

a) Antagonist of N_M receptors;
b) Antagonist of M_1 receptors;
c) Antagonist of M_2 receptors;
d) Agonist of M_3 receptors;
e) Antagonist of N_N receptors.

6. Select M-cholinergic antagonists:

a) Atropine;
b) Scopolamine;
c) Homatropine;
d) Trimethaphan;
e) Azamethonium bromide;
f) Darifenacine;
g) Tropicamide;
h) Pipecuronium bromide;
i) Suxamethonium chloride;
j) Trihexyphenidyl;
k) Pirenzepine;
l) Aprophen;
m) Atracurium.

7. NN-cholinoblockers

a) Atropine;
b) Pilocarpine;
c) Pirenzepine;
d) Trimethaphan;
e) Azamethonium bromide.

8. N_M-cholinoblockers

a) Pipecuronium bromide;
b) Pancuronium bromide;
c) Atracurium;
d) Neostigmine;
e) Pyridostigmine.

9. Pharmacological effects of M-cholinergic antagonists:

a) Pupil dilatation (mydriasis) and the loss of light reflex;
b) Decreased intraocular pressure;
c) Cycloplegia;
d) Bradycardia;
e) Tachycardia;
f) Decreased secretion of exocrine glands;
g) Decreased secretion of bronchial glands.

10. Effect of atropine on eye:

a) Contraction of circular muscle of the iris;
b) Relaxation of the ciliary muscle.

11. Effects of hyoscine hydrobromide on CNS:

a) CNS depression;
b) Pleasure emotions;
c) Paradoxal reaction with hallucinations in toxic doses;
d) No effect.

12. M-cholinergic antagonist used as bronchodilator:

a) Homatropine;
b) Pirenzepine;
c) Trimethaphan;
d) Ipratropium bromide;
e) Tropicamide;
f) Darifenacine.

13. Selective M_3-cholinergic antagonists used to decrease the tone of the urinary bladder:

a) Propantheline bromide;
b) Trihexyphenidyl;
c) Darifenacine;
d) Trepirium iodide;
e) Suxamethonium chloride;
f) Tolterodin.

14. Indications for administration of M-anticholinergic drug are:

a) Intestinal atony;
b) Asthma;
c) Reflex bradycardia;
d) Renal and intestinal colics;
e) Hypersecretion of salivary and bronchial glands;
f) Gastric ulcer and duodenal ulcer;
g) Hypoacid gastritis;
h) Paralysis of accommodation.

15. Atropine:

a) Reduces the heart rate;
b) Increases the secretion of salivary glands;
c) Decreases the secretion of salivary glands;
d) Reduces the pupil (miosis);
e) Paralyses the urinary bladder and causes urinary retention;
f) Non-selectively blocks M-cholinergic receptors.

16. Ipratropium bromide:

a) Decreases the motility of the gastro-intestinal tract;
b) Decreases the secretion of the bronchial glands;
c) Increases the secretion of the bronchial glands;
d) Dilates the bronchi;
e) Causes bronchospasm.

17. Scopolamine:

a) Increases intraocular pressure;
b) Intensifies the motility of the gastro-intestinal tract;
c) Increases the secretion of digestive glands;
d) Relaxes bronchial smooth muscle;
e) Causes spasm of accommodation.

18. Therapeutic applications of darifenacin:

a) Urinary disorders;
b) Reduction of urinary incontinence;
c) Glaucoma;
d) Decreased secretion of digestive glands;
e) Bronchial asthma.

19. Therapeutic applications of pirenzepine:

a) Reduction of the secretion of digestive glands;
b) Peptic ulcer;
c) Therapy of urinary incontinence;
d) Bronchial asthma;
e) As mydriatic.

20. Tropicamide:

a) Reduces intraocular pressure;
b) Increases intraocular pressure;
c) Causes spasm of accommodation;
d) Causes paralysis of accommodation;
e) Reduces the pupil (miosis);
f) Causes the pupil dilatation (mydriasis).

21. Therapeutic applications of tropicamide:

a) As mydriatic;
b) As cycloplegic (to prevent hypertrophy of ciliary muscle);
c) In patients with increased intraocular pressure;
d) Treatment of bronchospasm;
e) Treatment of urinary incontinence.

22. Atropine is used:

a) For the treatment of poisoning with anticholinesterase drugs;
b) For the treatment of sialorrhoea (hypersalivation);
c) The treatment of poisoning with muscle relaxant drugs;
d) For the treatment of intestinal atony;
e) In patients with decreased body temperature.

23. Trihexyphenidyl is used:

a) For the treatment of parkinsonism;
b) For the treatment of bronchial asthma;
c) For cycloplegia during testing of refraction;
d) For the treatment of poisoning with muscle relaxant drugs.

24. Drugs applied in case of atropine overdose are:

a) Pyridostigmine bromide;
b) Neostigmine;
c) Acetylcholine chloride;
d) Ipratropium bromide;
e) Pipecuronium bromide.

25. Choose the drugs that are used as cycloplegics (for testing of refraction or to prevent hypertrophy of ciliary muscle)

a) Ipratropium bromide;
b) Pilocarpine;
c) Homatropine;
d) Tropicamide;
e) Atropine.

26. Pharmacological effects of ganglionic blockers:

a) Hypotension (reduction of blood pressure);
b) Intensifying the motility of the gastro-intestinal tract;
c) Decreased motility of the gastro-intestinal tract;
d) Mydriasis and paralysis of accommodation;
e) Bronchodilatation;
f) Bronchospasm;
g) Decreased secretion of digestive glands.

27. Clinical applications for ganglionic blockers:

a) Arterial hypertension, hypertensive crisis;
b) Spasm of arterioles;
c) Gastric and duodenal ulcers;
d) For adjustable hypotonia;
e) Pulmonary edema;
f) Cerebral edema.

28. Side effect of ganglionic blockers are:

a) Postural hypotension;
b) Intestinal atony;
c) Miosis;
d) Paralysis of accommodation;
e) Xerostomia;
f) Frequent urination;
g) Atony of the urinary bladder.

29. Aid measures in case of respiratory arrest caused by pipecuronium bromide:

a) Introduction of analeptics;
b) Introduction of anticholinesterase drugs;
c) Artificial lung ventilation.

30. Pipecuronium bromide:

a) Facilitates neuromuscular transmission;
b) Interrupts neuromuscular transmission;
c) Raises muscle tone;
d) Reduces muscle tone;
e) Has no effect on muscle tone.

31. The sequence of muscle relaxation after muscle relaxants application:

a) Hands, feet, limbs muscles;
b) Diaphragm;
c) Intercostal muscles;
d) Oculomotor muscles;
e) Neck and face muscles.

ADRENERGIC DRUGS

1. Specify selective α_1-adrenomimetic:

a) Epinephrine;
b) Dobutamine;
c) Ephedrine;
d) Phenylephrine;
e) Isoprenaline;
f) Salbutamol.

2. Specify selective α_2-adrenomimetic:

a) Amphetamine;
b) Terbutaline;
c) Clonidine;
d) Salmeterol;
e) Norepinephrine.

3. Specify α_1, α_2-adrenomimetic:

a) Norepinephrine;
b) Naphazoline;
c) Dopamine;
d) Isoprenaline;
e) Phenylephrine.

4. **Specify sympathomimetic:**
   a) Phenylephrine; c) Ephedrine; e) Fenoterol.
   b) Dobutamine; d) Salbutamol;

5. **Isoprenaline causes:**
   a) Stimulation of α- and β-receptors;
   b) Blockade of α- and β-receptors;
   c) Selective stimulation of β_1-receptors;
   d) Selective stimulation of β_2-receptors;
   e) Stimulation of β_1, β_2 and β_3-receptors;
   f) Blockade of β_1, β_2 and β_3-receptors.

6. **Salbutamol causes:**
   a) Stimulation of α- and β-receptors;
   b) Blockade of α- and β-receptors;
   c) Selective stimulation of β_1-receptors;
   d) Selective stimulation of β_2-receptors;
   e) Stimulation of β_1, β_2 and β_3-receptors;
   f) Blockade of β_1, β_2 and β_3-receptors.

7. **Localization of sympathetic part of peripheral nervous system:**
   a) Cranial outflow; b) Thoracolumbar outflow; c) Sacral outflow.

8. **Localization of α_1-adrenoreceptors:**
   a) Bronchial smooth muscles; e) Gastro-intestinal sphincters;
   b) Uterus; f) Pilo-motor smooth muscle;
   c) Radial muscle of iris; g) Urinary sphincter;
   d) Circular muscle of iris; h) Spleen capsule.

9. **Localization of α_2-adrenoreceptors**
   a) Cardiac conduction system; d) Adipose tissue;
   b) Presynaptic nerves; e) Bronchial smooth muscle;
   c) Thrombocytes; f) Radial muscle of iris.

10. **Localization of β_1-adrenoreceptors:**
   a) Blood vessels; d) Bronchial smooth muscle;
   b) Heart; e) Uterus;
   c) Cardiac conduction system; f) Juxtaglomerular apparatus.

11. **Localization of β_2-adrenoreceptors:**
   a) Blood vessels; d) Uterus;
   b) Cardiac conduction system; e) Juxtaglomerular apparatus;
   c) Bronchial smooth muscle; f) Blood vessels of skeletal muscle.

12. **Localization of D_1-receptors:**
   a) Blood vessels; d) Adipose tissue;
   b) Bronchial smooth muscle; e) Blood vessels of the kidney;
   c) Mesenteric vessels; f) Intestinal tract.

13. Effects associated with the activation of α_1-adrenoceptors:

a) Constriction of blood vessels;
b) Dilation of blood vessels;
c) Myosis;
d) Decreased blood pressure;
e) Reflex bradycardia;
f) Increase in the tone of the GI sphincter;
g) Mydriasis;
h) Increase in arterial pressure.

14. Effects of activation of α_2-receptors:

a) Increase in NE release;
b) Decrease in NE release;
c) Increase in the heart rate;
d) Activation of platelet adhesion;
e) Decreased platelet adhesion;
f) Lipolysis inhibition.

15. Stimulation of β_1-adrenergic receptors causes the following changes in the indices of the heart:

a) Increase in the heart rate and myocardial contractility;
b) Decrease in excitability;
c) Increase in automaticity and conduction velocity;
d) Decrease in automaticity and conduction velocity;
e) Increase in the cardiac output;
f) Decrease in the cardiac output;
g) Decrease in the heart rate and myocardial contractility;
h) Increase in excitability.

16. Effect of activation of β_1-receptors

a) Increased renin secretion;
b) Decreased renin secretion;
c) Increased arterial pressure;
d) Decreased arterial pressure;
e) Bronchospasm;
f) Bronchodilation;
g) Increased basal metabolism;
h) Decreased basal metabolism;
i) Increased glycogenolysis;
j) Decreased glycogenolysis;
k) Lipolysis activation;
l) Lipolysis inhibition.

17. Effect of activation of β_2-receptors

a) Increased heart rate;
b) Vasodilation;
c) Bronchodilation;
d) Increased tone and contractile activity of the myometrium;
e) Decreased tone and contractile activity of the myometrium;
f) Increased glycogenolysis.

18. Effect of activation of β_3-receptors

a) Increased glycogenolysis;
b) Decreased glycogenolysis;
c) Lipolysis activation;
d) Increased blood free fatty acids;
e) Hyperglycemia;
f) Hypoglycemia.

19. Effect of activation of D_1-receptors:

a) Reduction of the tone of blood vessels in skeletal muscles, kidney, GIT, heart, CNS;

b) Increase in the tone of blood vessels in skeletal muscles, kidney, GIT, heart, CNS;

c) Increased heart rate;

d) Decreased heart rate.

20. Drugs that are applied for the treatment of asthma:

a) Propranolol;
b) Ephedrine;
c) Norepinephrine;
d) Isoprenaline;
e) Xylometazoline;
f) Salbutamol;
g) Fenoterol.

21. Drugs that are locally applied in rhinitis:

a) Propranolol;
b) Oxymetazoline;
c) Ephedrine;
d) Isoprenaline;
e) Phenylephrine;
f) Salbutamol;
g) Xylometazoline.

22. Drugs that are used for the treatment of arterial hypotension:

a) Phenylephrine;
b) Epinephrine;
c) Ephedrine;
d) Salbutamol;
e) Dobutamine.

23. β_1-Agonists are used to treat the following diseases:

a) Hypotension;
b) Bronchial asthma;
c) Arrhythmia;
d) Atrioventricular heart block;
e) Congestive cardiac failure.

24. Correct statements about epinephrine:

a) It is a transmitter in the sympathetic system;

b) Synthesis of catecholamines begins with the amino acid tyrosine;

c) Mediate negative-feedback control of NE secretion;

d) Epinephrine are inactivated in the liver by catechol-O-methyltransferase (COMT).

25. Epinephrine has the following effects

a) Cardiac stimulation;
b) Constriction of the blood vessels of muscles;
c) Constriction of the blood vessels of the skin;
d) Bronchodilatation;
e) Hyperglycemia.

26. Epinephrine is used in case of:

a) Essential hypertension;
b) Anaphylactic shock;
c) Bronchial asthma;
d) Arteritis obliterans;
e) Cardiac resuscitation;
f) Hypoglycemia;
g) Prolongation of local anesthesia.

27. Dopamine has the following features:

a) Stimulates of dopamine receptor only;
b) Dilates renal blood vessels;
c) May cause severe heart failure with renal impairment;
d) Crosses the BBB;
e) Route of administration is orally only.

28. Dopamine is used for treating the following diseases:

a) Congestive cardiac failure;
b) Essential hypertension;
c) Hypotension;
d) Cardiogenic shock;
e) Bronchial asthma;
f) Oligouric shock.

29. Correct statements about ephedrine:

a) Releases NE from sympathetic nerve endings;
b) Is administered orally;
c) The duration of its action is less than that of epinephrine;
d) It starts to act slowlier then epinephrine;
e) It has a more pronounced effect on the central nervous system than epinephrine.

30. Drugs that can cause bronchodilation:

a) Epinephrine;
b) Ephedrine;
c) Phenylephrine;
d) Isoprenaline;
e) Salbutamol.

ADRENERGIC ANTAGONISTS

1. β_1-adrenergic antagonist which additionally stimulates NO (nitrogen oxide) release:

a) Sotalol; b) Nadolol; c) Nebivolol; d) Pindolol.

2. β_1, β_2-adrenergic antagonist with intrinsic sympathomimetic activity (ISA):

a) Metoprolol; b) Pindolol; c) Labetalol; d) Phentolamine.

3. β_1-adrenergic antagonist with intrinsic sympathomimetic activity (ISA):

a) Tamsulosin; b) Pindolol; c) Propranolol; d) Acebutolol.

4. Drugs used to treat glaucoma:

a) Propranolol; b) Yohimbine; c) Timolol; d) Guanethidine.

5. Drugs used for the treatment of benign prostatic hyperplasia (BPH):

a) Phentolamine; b) Prazosin; c) Tamsulosin; d) Carvedilol.

6. Alfa-adrenergic (both selective and non-selective) antagonists are:

a) Nadolol;
b) Prazosin;
c) Labetalol;
d) Yohimbine;
e) Clonidine;
f) Phentolamine;
g) Metoprolol;
h) Tamsulosin;
i) Dihydroergotamine;
j) Guanethidine.

7. α_2-adrenergic antagonist is:

a) Tamsulosin; b) Carvedilol; c) Yohimbine; d) Timolol.

8. Beta-adrenergic (both selective and non-selective) antagonists are:

a) Reserpine;
b) Prazosin;
c) Propranolol;
d) Nebivolol;
e) Guanethidine;
f) Terazosin;
g) Nadolol;
h) Doxazosin;
i) Atenolol;
j) Metoprolol.

9. Mixed-action (alfa and beta) adrenergic antagonists are:

a) Guanethidine;
b) Phentolamine;
c) Labetalol;
d) Timolol;
e) Carvedilol;
f) Dihydroergotamine.

10. Sympatholytics are:

a) Guanethidine; b) Yohimbine; c) Prazosin; d) Reserpine; e) Sotalol.

11. α_1-adrenergic antagonists are:

a) Nadolol;
b) Prazosin;
c) Phentolamine;
d) Tamsulosin;
e) Doxazosin;
f) Labetalol.

12. α_1, α_2-adrenergic antagonists are:

a) Propranolol;
b) Terazosin;
c) Phentolamine;
d) Acebutolol;
e) Dihydroergotamine.

13. β_1, β_2-adrenergic antagonists without intrinsic sympathomimetic activity (ISA) are:

a) Propranolol;
b) Phentolamine;
c) Carvedilol;
d) Nadolol;
e) Doxazosin;
f) Sotalol;
g) Prazosin;
h) Guanethidine;
i) Timolol;
j) Phenylephrine.

14. Selective β_1-adrenergic antagonists without intrinsic sympathomimetic activity (ISA) are:

a) Sotalol;
b) Metoprolol;
c) Atenolol;
d) Reserpine;
e) Phentolamine;
f) Bisoprolol;
g) Timolol;
h) Propranolol;
i) Nebivolol;
j) Dihydroergotamine.

15. α-adrenergic antagonists decrease:

a) Bronchi tone;
b) Vascular tone;
c) Heart rate;
d) Blood pressure;
e) Smooth muscle tone in the neck of the urinary bladder and prostatic urethra.

16. β-adrenergic antagonists decrease:

a) Heart rate;
b) Bronchi tone;
c) Vascular tone;
d) Myocardial contractility;
e) Automaticity;
f) Secretion of renin.

17. β-adrenergic antagonists may increase:

a) Heart rate;
b) Vascular tone;
c) Secretion of intraocular fluid;
d) Bronchi tone;
e) Activity of the myometrium;
f) Myocardial oxygen demand.

18. Effects of propranolol:

a) Decreased automaticity;
b) Atrioventricular conduction delay;
c) Release of glucose;
d) Decreased blood pressure;
e) Increased renin secretion;
f) May increase the tone and contractile activity of the myometrium.

19. Timolol decreases:

a) Blood pressure;
b) Myocardial oxygen demand;
c) Activity and tone of the myometrium;
d) Automatism of heart;
e) Intraocular fluid production;
f) Bronchi tone.

20. Labetalol increases:

a) Heart rate and contractility;
b) Bronchi tone (in patient with asthma);
c) Cardiac output;
d) Vascular tone;
e) Blood pressure.

21. Effects of reserpine:

a) Decreases blood pressure;
b) Bradycardia;
c) Reduces the secretion of gastric acid;
d) Increases the release of gastric acid;
e) Increases motion of the gastro-intestinal tract;
f) CNS induction;
g) Sedation.

22. Indications for the use of α-adrenergic antagonists:

a) Hypotension;
b) Arterial hypertension;
c) Spasms of peripheral blood vessels;
d) Pheochromocytoma;
e) Prostatic hyperplasia.

23. Indications for use of β-adrenergic antagonists:

a) Hypotension;
b) Arterial hypertension;
c) Atherosclerotic cardiovascular disease;
d) Delayed atrioventricular conduction;
e) Bronchial asthma;
f) Tachyarrhythmia.

24. Indications for the use of labetalol:

a) Hypertensive crisis;
b) Arterial hypertension;
c) Tachyarrhythmia;
d) Open-angle glaucoma;
e) Pheochromocytoma.

25. Drugs for the treatment of arterial hypertension:

a) Doxazosin;
b) Aceclidine;
c) Metoprolol;
d) Physostigmine;
e) Phenylephrine;
f) Prazosin;
g) Ephedrine;
h) Labetalol;
i) Propranolol,
j) Reserpine.

26. Side effects of α-adrenergic antagonists:

a) Bronchospasm;
b) Tachycardia;
c) Depress A–V nodal activity;
d) Postural hypotension;
e) Mydriasis.

27. Side effects of β_1, β_2-adrenergic antagonists:

a) Bradycardia;
b) Depress A–V nodal activity;
c) Vasoconstriction;
d) May cause bronchospasm;
e) Decrease tone and contractile activity of the myometrium;
f) Intestinal atony.

28. Side effects of β_1-adrenergic antagonists:

a) Bradycardia;
b) Depress A–V nodal activity;
c) Increase cardiac failure;
d) Vasoconstriction;
e) Bronchospasm;
f) Increase tone and contractile activity of the myometrium.

29. Drugs that cause postural hypotension:

a) Prazosin;
b) Phentolamine;
c) Propranolol;
d) Atenolol;
e) Labetalol.

30. Side effects of α, β-adrenergic antagonists:

a) Postural hypotension;
b) Bradycardia;
c) Depress A–V nodal activity;
d) Increase cardiac failure;
e) May cause bronchospasm;
f) Vasoconstriction.

DRUGS AFFECTING AFFERENT NERVES ENDINGS

1. Lidocaine is used for:

a) Surface anesthesia; c) Infiltration anesthesia;
b) Conduction anesthesia; d) General anesthesia.

2. Procaine is used for:

a) Surface anesthesia; c) Infiltration anesthesia;
b) All types of anesthesia; d) Conduction anesthesia.

3. Lidocaine:

a) Blocks active sodium channels with higher affinity than resting sodium channels;
b) Can cause cardiotoxicity;
c) Is given orally for the treatment of cardiac arrhythmias;
d) Epinephrine prolongs the action of lidocaine used for infiltration anesthesia.

4. Maximum dose of lidocaine given with adrenaline for infiltration anesthesia is:

a) 3 mg/kg; b) 5 mg/kg; c) 7 mg/kg; d) 10 mg/kg.

5. The combination of an anesthetic agent and a vasoconstrictor is contraindicated in?

a) Digital block; c) Epidural block;
b) Spinal block; d) Regional anesthesia.

6. How many milligrams of lidocaine is given in case of the administration of 2.5 cartridges of 4 % lidocaine with 1:100.000 epinephrine?

a) 0.043 mg; b) 0.025 mg; c) 170 mg; d) 62.5 mg.

7. How many milligrams of epinephrine is given in case of the administration of 2.5 cartridges of 4 % lidocaine with 1:100.000 epinephrine?

a) 0.043 mg; b) 0.025 mg; c) 170 mg; d) 62.5 mg.

8. Blockade of nerve conduction by a local anesthetic is characterized by:

a) Greater potential to block a resting nerve as compared to a stimulated nerve;
b) Necessity to cross the cell membrane to produce the block;
c) Large myelinated fibers are blocked before unmyelinated fibers;
d) Cause consistent change of resting membrane potential.

9. In spinal anesthesia local anesthetics is deposited between:

a) Dura and arachnoid; c) Dura and vertebra;
b) Pia and arachnoid; d) Penetrate the cord substance.

10. Which of the following statements about local anesthetics is true?

a) The local anesthetic must be in unionized form for penetrating the neuronal membrane;

b) The local anesthetic approaches its receptor only from the intraneuronal face of the Na^+ channel;

c) The local anesthetic mainly binds to its receptor when the Na^+ channel is in resting state;

d) The local anesthetic combines with its receptor in ionized cationic form.

11. The following local anesthetic raises BP instead of tending to cause a BP fall:

a) Cocaine; b) Dibucaine; c) Lidocaine; d) Procaine.

12. Which of the following local anesthetics belongs to the ester group?

a) Procaine; b) Bupivacaine; c) Lidocaine; d) Mepivacaine.

DIURETIC DRUGS

1. Application points of thiazide and thiazide-like diuretics in nephron:

a) Proximal renal tubules;
b) The ascending part of Henle's loop;
c) Distal renal tubules (final part);
d) Distal renal tubules (initial part);
e) Collector renal tubules.

2. Application points of furosemide and bumetanide in nephron:

a) Proximal renal tubules;
b) The ascending part of Henle's loop;
c) Distal renal tubules;
d) Collector renal tubules;
e) The descending part of Henle's loop.

3. Application points of potassium-sparing diuretics in nephron:

a) Proximal renal tubules;
b) The ascending part of Henle's loop;
c) Distal renal tubules (initial part);
d) Collector renal tubules;
e) Glomerulus.

4. Application points of osmotic diuretics in nephron:

a) Acting on the whole nephron;
b) The ascending part of Henle's loop;
c) Distal renal tubules (initial part);
d) Collector renal tubules;
e) Only proximal renal tubules.

5. Pharmacodynamic features of hydrochlorthiazide:

a) Inhibits reabsorption of Na^+, Cl^-, HCO_3^--ions;
b) Remains K^+-ions in the organism;
c) Effect lasts 4–8 hours;
d) Effect lasts more than 24 hours;
e) Increases the action of antihypertensive drugs;
f) Increases the reabsorption of Ca^{2+}-ions.

6. Properties of furosemide are as follows:

a) Slow onset of the effect;
b) Short-term effect (2–4 hours);
c) High diuretic potency;
d) Decrease in the blood pressure;
e) Increase in the reabsorption of Ca^{2+} и Mg^{2+} ions;
f) Acts on the proximal renal tubules.

7. Properties of spironolactone:

a) Decreases K^+ ions excretion;
b) Delays Na^+ ions excretion;
c) High efficacy;
d) Quick onset of the effect;
e) Blocks the synthesis of aldosterone;
f) Clinical application implies increased aldosterone secretion.

8. Properties of acetozolamide:

a) Decreases K^+ ions excretion;
b) Increases the excretion of Na^+, HCO_3^--ions;
c) Clinical application implies increased aldosterone secretion;
d) Clinical indications include glaucoma;
e) Long-term application can causes acidosis;
f) Deafness is typical adverse effect.

9. Mannitol:

a) Inhibits Na^+-K^+-$2Cl^-$ co-transporter in the thick ascending part of Henle's loop;
b) Increases osmotic pressure in the renal tubules;
c) Can be used as dehydrator;
d) Is indicated for forced diuresis;
e) Is indicated in case of chronic heart failure;
f) Is well absorbed in the intestine.

10. The following drugs can be used for the treatment of arterial hypertension:

a) Hydrochlorthiazide; c) Mannitol; e) Acetazolamide;
b) Chlortalidone; d) Spironolactone; f) Indapamide.

11. The following drugs can be used for forced diuresis:

a) Bendroflumethiazide;
b) Triamterene;
c) Spironolactone;
d) Mannitol;
e) Furosemide;
f) Metolazone.

12. Choose the practical combinations of diuretics:

a) Furosemide + acetazolamide;
b) Hydrochlorthiazide + amiloride;
c) Amiloride + triamterene;
d) Triamterene + chlorthalidone;
e) Spironolactone + hydrochlorthiazide;
f) Mannitol + acetazolamide.

13. Hydrochlorthiazide and furosemide can be combined with spironolactone for the following purposes:

a) Prevention of hypercalcemia;
b) Prevention of hypokalemia;
c) Increase in the effect duration;
d) Changing the pH of the urine;
e) Inhibition of aldosterone secretion.

14. Indications for loop diuretics:

a) Edema caused by heart failure;
b) Pulmonary edema;
c) Acute hypercalcemia;
d) Hypokalemia caused by thiazide diuretics;
e) Brain edema;
f) Elevated antidiuretic hormone.

15. Indications for thiazide diuretics:

a) Nephrogenic diabetes insipidus;
b) Hypertension;
c) Congestive heart failure;
d) For forced diuresis;
e) Idiopathic calciuria;
f) Toxic pulmonary edema.

ANTIHYPERTENSIVE DRUGS

1. Arterial blood pressure is directly proportional to:

a) Cardiac output and peripheral vascular resistance;
b) Heart rate and peripheral vascular resistance;
c) Stroke volume and heart rate;
d) Cardiac output and heart rate;
e) All answer choices are not correct.

2. What antihypertensive drug can block the production of renin?

a) Prazosin;
b) Metoprolol;
c) Captopril;
d) Sodium nitroprusside;
e) Diazoxide;
f) Clonidine.

3. What diuretic should be prescribed in case of hypertensive crises complicated by pulmonary edema?

a) Furosemide; c) Triamterene; e) Bendroflumethiazide;
b) Indapamide; d) Mannitol; f) Chlortalidone.

4. Targets of antihypertensive drugs are:

a) β-adrenergic receptors; d) α_1-adrenergic receptors;
b) α_2-adrenergic receptors; e) Angiotensin-II receptors;
c) I_1-imidazoline receptors; f) N_m-cholinergic receptors.

5. Mechanisms of hypotensive action of diuretics:

a) Reduction of circulating blood volume;
b) Increase in the synthesis of vasolytic prostaglandins in the kidney;
c) Reduction of vessel response to vasoconstrictors;
d) For some diuretics — direct vasolytic action;
e) Decrease in the heart rate.

6. Typical side-effects of thiazides and thiazide-like diuretics:

a) Electrolyte disturbances; d) Hyperglycemia;
b) Dry cough, rashes; e) Hyperlipidemia;
c) Swellings; f) Hyperuricemia.

7. Counterindications for ACE-inhibitors:

a) Pregnancy; d) Heart failure;
b) Bilateral renal artery stenosis; e) Hyperpotassemia.
c) Hypopotassemia;

8. Clonidine:

a) Has analgesic activity;
b) Is precursor of norepinephrine;
c) Rapid infusion can lead to a transient increased blood pressure;
d) Has effects of anxiolytic as well as sedative drug and causes amnesia;
e) Can treat withdrawal symptoms in opioid and alcohol addicts.

9. Non-selective β-adrenergic blockers shouldn't be applied in patients with bronchial asthma and chronic obstruction pulmonary disease because of:

a) Block of β_2-adrenergic receptors that can lead to bronchospasm;
b) Stimulation of gland secretion;
c) Intensification of pulmonary blood supply;
d) Negative influence on gas exchange;
e) Inhibition of cells respiration.

10. Methyldopa:

a) Is first-line antihypertensive drug during pregnancy;
b) Can cause orthostatic hypotension;
c) Is used for relief of hypertensive crises;
d) Has the same final effect as clonidine;
e) Does not pass through blood-brain barrier.

11. The main aims of arterial hypertension treatment:

a) Reduction of blood pressure to the level of less than 140/90 mmHg;
b) Prevention of eventual end-organ damage (heart, kidney, brain);
c) Prevention of cardiovascular complications, increasing the life expectancy;
d) Relief of hypertensive crises, nothing else is important;
e) Keep blood pressure at the level of well-being, without complaints.

12. During the treatment of arterial hypertension with α-adrenergic antagonists there may be:

a) Reflex tachycardia;
b) Bradycardia;
c) Increased plasma concentrations of very-low-density lipoproteins;
d) Decreased sympathetic influence;
e) Improvement of blood supply in peripheral arteries.

13. Ganglionic blockers can be used in case of:

a) Long-term treatment of arterial hypertension;
b) Relief of hypertensive crises;
c) Controlled hypotension;
d) Increase in blood pressure in patients with collapse;
e) Ganglionic blockers do not change blood pressure.

14. What is the mechanism of action of calcium channel blockers (one answer)?

a) Interact with membrane phospholipids and inhibit ion transport;
b) Block the Na^+/K^+ ATPase in smooth muscles and heart;
c) Interact with definite domen of calcium L-type channel;
d) Decrease the Ca^{2+} influx as a result of interactions with sodium-channels;
e) Disturb the actin-myosin interaction.

15. Side-effects of vasodilating calcium channel blockers:

a) Ankle swellings;
b) Headache;
c) Bradycardia;
d) Reflex tachycardia.

ANTIANGINAL AND HYPOLIPIDEMIC DRUGS

1. Atenolol:

a) Cardioselective β-adrenergic antagonist;
b) Has intrinsic symphatomimetic activity;
c) Passes through blood-brain barrier;
d) Dilates coronary vessels;
e) Can be used for relief of angina attacks.

2. **Verapamil:**
   a) Can be applied to treat vasospastic (or variant) angina pectoris;
   b) Speed up the conduction through the AV node;
   c) Increases the heart rate;
   d) Dilates all vessels except coronary;
   e) Is used for relief of angina attacks.

3. **Mechanism of antianginal effect of isosorbide mononitrate:**
   a) Blocks calcium channels;
   b) Activates potassium channels;
   c) Release of nitric oxide (NO);
   d) Blocks β-adrenergic receptors;
   e) Blocks α-adrenergic receptors.

4. **Define the antianginal drugs:**
   a) Metoprolol;
   b) Clonidine;
   c) Isosorbide mononitrate;
   d) Enalapril;
   e) Indapamide;
   f) Amlodipine.

5. **β-adrenergic antagonists:**
   a) Dilate coronary vessels;
   b) Dilate large veins, decrease the amount of blood returned to the heart;
   c) Increase the myocardial oxygen supply;
   d) Decrease the myocardial oxygen demand;
   e) Decrease heart rate and contractility.

6. **Propranolol:**
   a) Selective β_1-adrenoreceptor blocker;
   b) Antagonist with intrinsic sympathomimetic activity;
   c) Can cause bronchospasm;
   d) Passes into CNS, causes depression;
   e) Dilates coronary vessels.

7. **Metoprolol:**
   a) Cardioselective β-adrenergic antagonist;
   b) Passes through blood-brain barrier;
   c) Dilates coronary vessels;
   d) Does not change heart rate;
   e) Causes «coronary steal phenomenon».

8. **Side-effects of propranolol:**
   a) Disturbance of atrioventricular conduction;
   b) Bronchospasm;
   c) Depression, sedation, sleeplessness;
   d) Increase in blood pressure;
   e) Increase in intraocular pressure.

9. The preload and the afterload are decreased by:

a) Metoprolol; c) Isosorbide dinitrate; e) Nitroglycerin.
b) Verapamil; d) Isosorbide mononitrate;

10. Reflex tachycardia is caused by:

a) Isosorbide dinitrate; c) Nifedipine; e) Amlodipine.
b) Metoprolol; d) Verapamil;

11. Atrioventricular conduction can be disturbed by:

a) Nitroglycerin; c) Verapamil; e) Molsidomine.
b) Atenolol; d) Trimetazidine;

12. Amlodipine:

a) Is vasodilating calcium channel blocker;
b) Has antiarrhythmic activity;
c) Causes increased plasma concentrations of very-low-density lipoproteins;
d) Has antihypertensive activity;
e) Can cause reflex tachycardia.

13. Nicorandil:

a) Is a nicotinamide nitrate ester;
b) Decreases the preload and afterload;
c) Potassium channels activator;
d) Is the first-line drug for relief of angina attack;
e) Blocks β-adrenergic receptors.

14. Common properties of propranolol and verapamil:

a) Decrease force of myocardial contraction;
b) Decrease myocardial oxygen demand;
c) Cause coronary steal phenomenon;
d) Inhibit atrioventricular conduction;
e) Can cause bronchospasm.

15. First-line drugs for pain relief in case of myocardial infarction:

a) Morphine; b) Metamizole; c) Fentanyl; d) Keterolac; e) Validol.

DRUGS USED FOR THE TREATMENT OF HEART FAILURE

1. ACE inhibitors are the first-line drugs in the treatment of chronic heart failure because they:

a) Retard remodeling and cardiac hypertrophy;
b) Deftly manage with control of drug plasma concentration;
c) Improve pump heart function followed by improvement of clinical symptoms;
d) Have high tolerability and low cost;
e) Can be applied once a day.

2. The main benefit of β-adrenergic antagonists in the treatment of chronic heart failure is:

a) Reduction of heart remodeling and improvement of prognosis;
b) Improvement of clinical symptoms and quality of life;
c) Increase of pump heart function;
d) High tolerability and low cost;
e) Monotherapy.

3. Correct assumptions about diuretic usage in the treatment of chronic heart failure:

a) Clinical symptoms of congestion are indications for their use (start with class II failure);
b) Loop diuretics are preferential;
c) Reduce the heart remodeling;
d) Improve the prognosis because they retard the progress of heart failure;
e) Pulse-therapy is effective only.

4. The main groups of drugs in the treatment of chronic heart failure:

a) Renin-angiotensin system inhibitors;
b) Diuretic drugs;
c) Cardiac glycosides;
d) β-adrenergic antagonists;
e) Vasodilators;
f) Calcium channel blockers.

5. In the treatment of chronic heart failure the following drugs are considered vasodilators:

a) Amlodipine;
b) Spironolactone;
c) Prazosin;
d) Metoprolol;
e) Hydralazine;
f) Sodium nitroprusside.

6. For the following ACE inhibitors improvement of prognosis in the treatment of chronic heart failure is provided:

a) Fosinopril;
b) Captopril;
c) Enalapril;
d) Ramipril;
e) Lisinopril;
f) All of them.

7. Potassium chloride is indicated in the treatment of digoxin toxicity because of:

a) High level of potassium inhibits glycoside's binding to Na^+-K^+-ATPase;
b) High level of potassium induces glycoside's binding to Na^+-K^+-ATPase;
c) High level of potassium increases Ca^{2+} level in myocyte cells;
d) High level of potassium induces conduction from atriums to ventricles;
e) Potassium chloride is counter-indicated in the treatment of digoxin toxicity.

8. Effects of the treatment of chronic heart failure with cardiac glycosides:

a) Improve prognosis;
b) Slow down the progression of disease;
c) Clinical benefits;
d) Improve quality of life;
e) Extend life span.

9. Angiotensin-converting-enzyme inhibitors with long-term action (can be applicated once a day):

a) Captopril;
b) Amlodipine;
c) Lisinopril;
d) Ramipril;
e) Trandolapril.

10. Cardioselective β-adrenergic antagonists:

a) Bisoprolol;
b) Metoprolol;
c) Carvedilol;
d) Propranolol;
e) Atenolol.

11. Drugs increasing myocardial contractility that are phosphodiesterase inhibitors:

a) Dopamine; b) Dobutamine; c) Milrinone; d) Enoximone.

12. Effective measures in the treatment of digoxin toxicity are:

a) Infusion of unithiol;
b) Infusion of potassium chloride;
c) Treatment of AV-block with atropine;
d) Treatment of ventricle arrhythmias with lidocaine;
e) Renal dialysis;
f) Infusion of drugs containing Ca^{2+}.

13. Excess of dose over mean therapeutic dose of dopamine can cause:

a) Increase in peripheral vascular resistance;
b) Decrease in blood pressure;
c) Arrhythmias;
d) Tachycardia;
e) Orthostatic collapse;
f) Angina attack in patients with chronic heart failure.

14. Counterindications of cardiac glycosides:

a) Wolf–Parkinson–White syndrome;
b) Heart failure;
c) Supraventricular tachycardia;
d) AV block;
e) Glucoside intoxication;
f) Bradycardia.

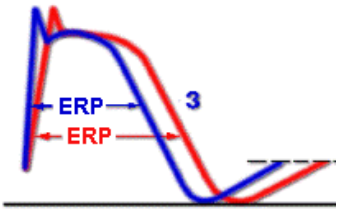
15. Unithiol can be used in the treatment of digoxin toxicity because this drug:

a) Stimulates the function of troponin complex proteins in cardiomyocytes;
b) Forces the metabolism of glycosides in the liver;
c) Decreases the Ca^{2+} influx in cardiomyocytes;
d) Recovers the SH-groups of Na^{+}-K^{+}-ATPase in cardiomyocytes.

ANTIARRHYTHMIC DRUGS

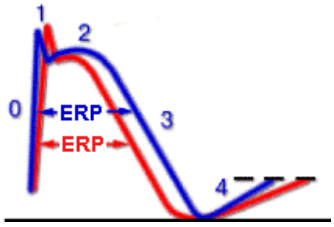
1. This picture shows the change of action potential during the treatment with antiarrhythmic drugs of class:

a) IB; b) IA; c) IC; d) II; e) IV.



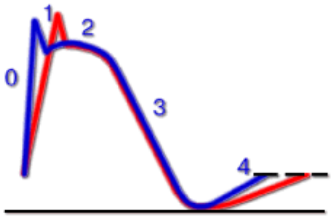
2. This picture shows the change of action potential during the treatment with antiarrhythmic drugs of class:

a) IB; b) IA; c) IC; d) III; e) IV;



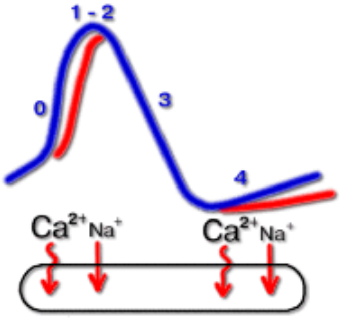
3. This picture shows the change of action potential during the treatment with antiarrhythmic drugs of class:

a) IB; b) IA; c) IC; d) II; e) III.



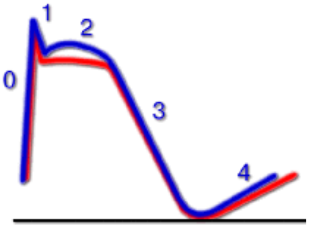
4. This picture shows the change of action potential during the treatment with antiarrhythmic drugs of class:

a) IB; b) IA; c) IC; d) III; e) IV.



5. This picture shows the change of action potential during the treatment with antiarrhythmic drugs of class:

a) IB; b) IA; c) IC; d) II; e) IV.



6. Define correct assertions about antiarrhythmic drugs of class IV:

a) By blocking voltage-gated sodium channels they slow down phase 0 of action potential;

b) They block calcium channels;

c) They slow down conduction through SA and AV nodes;

d) They facilitate the potassium channels gating, it leads to shortening of effective refractory period;

e) They block β_1-adrenergic receptors, it decreases automatism of SA and AV nodes.

7. Define correct assertions about antiarrhythmic drugs of class IA:

a) By blocking voltage-gated sodium channels they slow down the phase 0 of action potential;

b) By blocking potassium channels they prolong repolarization and effective refractory period;

c) They slow down conduction through SA and AV nodes by blocking calcium channels;

d) They facilitate the potassium channels gating, it leads to shortening of effective refractory period;

e) They block β_1-adrenergic receptors, it decreases automatism of SA and AV nodes.

8. Define correct assertions about antiarrhythmic drugs of class IB:

a) By blocking voltage-gated sodium channels they slow down the phase 0 of action potential;

b) By blocking potassium channels they prolong repolarization and effective refractory period;

c) They slow down conduction through SA and AV nodes by blocking calcium channels;

d) They facilitate the potassium channels gating, it leads to shortening of effective refractory period;

e) They block β_1-adrenergic receptors, it decreases automatism of SA and AV nodes.

9. Define correct assertions about antiarrhythmic drugs of class IC:

a) By blocking voltage-gated sodium channels they slow down the phase 0 of action potential;

b) By blocking potassium channels they prolong repolarization and effective refractory period;

c) They slow down conduction through SA and AV nodes by blocking calcium channels;

d) They do not change the duration of effective refractory period;

e) They block β_1-adrenergic receptors, it decreases automatism of SA and AV nodes.

10. Define correct assertions about antiarrhythmic drugs of class II:

a) By blocking voltage-gated sodium channels they slow down the phase 0 of action potential;

b) By blocking potassium channels they prolong repolarization and effective refractory period;

c) They slow down conduction through SA and AV nodes by blocking calcium channels;

d) They block β_1-adrenergic receptors;

e) They decrease automatism of SA and AV nodes.

11. What antiarrhythmic drugs bind to voltage-gated sodium channels firmly?

a) Antiarrhythmic drugs of class IA;
b) Antiarrhythmic drugs of class IB;
c) Antiarrhythmic drugs of class IC;
d) All antiarrhythmic drugs of class I;
e) Antiarrhythmic drugs of class I do not bind with sodium channels at all.

12. Antiarrhythmic drugs that dissociate from the channel with rapid kinetics are:

a) Drugs of class IA;
b) Drugs of class IB;
c) Drugs of class IC;
d) All antiarrhythmic drugs of class I;
e) Antiarrhythmic drugs of class I do not bind with sodium channels at all.

13. Amiodarone:

a) Blocks voltage-gated sodium channels, slows phase 0 of action potential;

b) By blocking potassium channels it prolongs repolarization and effective refractory period;

c) Blocks calcium channels;

d) It facilitates the potassium channels gating, it leads to shortening of effective refractory period;

e) It blocks β_1-adrenergic receptors, it decreases automatism of SA and AV nodes.

14. Side effects of amiodarone:

a) AV block;
b) Disfunction of thyroid gland;
c) Corneal microdeposits;
d) A gray-blue skin discoloration;
e) Photosensibilization, photodermatitis;
f) Arterial hypertension.

15. Side effects of drugs of class II:

a) Bronchospasm;
b) Bradycardia;
c) Increase in blood pressure;
d) AV block;
e) Heart failure;
f) Increase in intraocular pressure.

DRUGS AFFECTING BLOOD SYSTEM

1. Select characteristic features of treatment of iron deficiency anemia with oral iron supplements:

a) If 200–300 mg of elemental iron are consumed, about 50 mg are absorbed;

b) The proportion of iron absorbed reduces as hemoglobin improves;

c) The reticulocyte count should begin to increase in two weeks and peak in 4 weeks — this suggests good response to treatment;

d) The treatment should be discontinued as soon as hemoglobin normalizes to prevent side effects of iron.

2. Select correct statements about erythropoietin:

a) It is used for the treatment of anemia due to chronic renal failure;

b) It results in decrease in reticulocyte count;

c) It decreases the requirement of blood transfusions;

d) It can cause hypertension.

3. In the treatment of undiagnosed megaloblastic anemia, vitamin B_{12} and folic acid should be given together because:

a) Vitamin B_{12} acts as a cofactor for dihydrofolate reductase;

b) Folic acid alone causes improvement of anemic symptoms but neurological dysfunction continues;

c) Vitamin B_{12} deficiency may result in methylfolate trap;

d) Folic acid is required for conversion of methylmalonyl-CoA to succinyl-CoA.

4. Filgrastim is used for the treatment of:

a) Neutropenia; c) Polycythemia;

b) Anemia; d) Neutrophilia.

5. Iron is most commonly absorbed from:

a) Duodenum and upper jejunum; c) Stomach;

b) Lower jejunum; d) Ileum.

6. Which of the following drugs is most likely to be used in a young child with chronic renal insufficiency?

a) Cyanocobalamin; c) Erythropoietin;

b) Deferoxamine; d) Filgrastim (G-CSF).

7. The difference between iron sorbitol-citric acid and iron dextran is that the former:

a) Cannot be injected i.v.;

b) Is not bound to transferrin in plasma;

c) Is not excreted in urine;

d) Produces fewer side effects.

8. Which of the following metabolic reactions require vitamin B_{12} but not folate?

a) Conversion of malonic acid to succinic acid;
b) Conversion of homocysteine to methionine;
c) Conversion of serine to glycine;
d) Thymidylate synthesis.

9. Filgrastim is a:

a) T-cell stimulating factor; c) G-CSF;
b) GnRH analogue; d) GM-CSF.

10. Erythropoietin is mainly produced in:

a) Liver; b) Kidney; c) Intestine; d) Bone.

11. Indication for intramuscular iron therapy is:

a) Pregnancy; c) Emergency surgery;
b) Postpartum period; d) Oral iron intolerance.

12. Deficiency of this hemophilic factor during early pregnancy will result in neural tube defect:

a) Folic acid; b) Iron; c) Cyanocobalamine; d) Antioxidants.

13. Which of the following drugs act by blocking Gp IIb/IIIa receptors?

a) Abciximab; b) Eptifibatide; c) Tirofiban; d) Clopidogrel.

14. In low doses aspirin acts on:

a) Cyclooxygenase; c) PGI2 synthase;
b) Thromboxane A2 synthase; d) Lipoxygenase.

15. Select correct statements about clopidogrel

a) Directly interact with platelet membrane Gp IIb/IIIa receptor;
b) Onset of action is slow;
c) Prolonged action;
d) It is used as an alternative to aspirin in patients with cerebrovascular disease.

16. A drug that binds to and inhibits Gp IIb/IIIa glycoprotein and is responsible for platelet antiaggregatory effects is:

a) Clopidogrel; b) Enoxaparin; c) Fondaparinux; d) Tirofiban.

17. Select correct statements regarding ticlopidine:

a) It blocks GpIIb/IIIa receptors on platelet membrane;
b) It prevents ADP mediated platelet adenylyl cyclase inhibition;
c) It inhibits thromboxane A2 synthesis in platelets;
d) It does not prolong bleeding time.

18. Aspirin prolongs bleeding by inhibiting the synthesis of:

a) Adenosine receptors; c) Prostacyclin;
b) Cyclic AMP; d) Thromboxane A2.

19. Glycoprotein IIb/IIIa receptor antagonist is:

a) Clopidogrel; b) Abciximab; c) Tranexamic acid; d) Ticlopidine.

20. Select antiplatelet drugs:

a) Aspirin; b) Clopidogrel; c) Dipyridamole; d) Warfarin.

21. Clopidogrel is an antiplatelet agent that acts by:

a) Reducing myocardial oxygen requirements during exertion and stress;

b) Reducing myocardial oxygen requirements and by inducing coronary artery vasodilatation;

c) Inhibiting ADP-induced platelet aggregation;

d) None of the above.

22. Abciximab is:

a) Antibody against Ilb/Illa receptors;

b) Antibody against Ib/IX receptors;

c) Topoisomerase inhibitor;

d) Adenosine inhibitor.

23. Tirofiban is a:

a) Monoclonal antibody; c) Anti-inflammatory drug;

b) Antiplatelet drug; d) Antianginal drug.

24. A patient treated with heparin should not be given aspirin because the latter causes:

a) Platelet dysfunction;

b) Inhibiting the action of heparin;

c) Enhanced hypersensitivity to heparin;

d) Therapy by heparin cannot be monitored.

25. Vitamin K is involved in the post-translational modification of?

a) Glutamate; b) Aspartate; c) Glycine; d) GABA.

26. Vitamin K dependent clotting factors are:

a) Factor IX and X; e) Factor II (prothrombin);

b) Factor IV; f) Factor VII;

c) Factor XII; g) Proteins C and S.

d) Factor I;

27. Select correct statements about warfarin:

a) It inhibits the activation of vitamin K dependent clotting factors;

b) Its half-life is 36 hours;

c) It can cross placenta;

d) Its dose is increased in liver disease.

28. Drug used in heparin overdose is:

a) Protamine sulfate; c) Ticlopidine;

b) Phylloquinone; d) Clopidogrel.

29. As compared to unfractionated heparin, low molecular weight heparins:

a) Are absorbed more uniformly when given subcutaneously;
b) Require more frequent laboratory monitoring;
c) Can be given to patients with heparin induced thrombocytopenia;
d) Predispose to a higher risk of osteopenia.

30. LMW heparin is preferential to unfractionated heparin because:

a) LMW heparin directly inhibits thrombin whereas unfractionated heparin acts via activation of antithrombin;
b) LMW heparins have less risk of causing bleeding;
c) LMW heparin can be given subcutaneously as well as orally;
d) LMW heparin has consistent bioavailability.

31. Select correct statements about heparin:

a) It prolongs a PTT;
b) Hyperkalemia is not seen;
c) It can lead to alopecia;
d) It can cause thrombocytopenia.

32. Hemorrhage secondary to heparin administration can be corrected by the administration of:

a) Vitamin K; b) Whole blood; c) Protamine; d) Ascorbic acid.

33. Urgent reversal of warfarin induced bleeding can be done by the administration of:

a) Cryoprecipitate;
b) Platelet concentrates;
c) Fresh frozen plasma;
d) Packed red blood cells.

34. True statements about vitamin K are:

a) Increases the synthesis of II, VII, IX and X factors;
b) Requires exposure to sunlight;
c) Causes hemolytic anemia in patients with G-6-PD deficiency;
d) $T_{½}$ is < 6 hour.

35. Select correct statements about oral anticoagulants:

a) They interfere with an early step in the synthesis of clotting factors;
b) Irrespective of the dose administered, their anticoagulant effect has a latency of onset of 1–3 days;
c) Their dose is adjusted by repeated measurement of prothrombin time;
d) They are contraindicated during pregnancy.

36. Which of the following drugs does not cross placenta?

a) Heparin; b) Warfarin; c) Dicumarol; d) Nicoumalone.

37. Oral anticoagulants are monitored by:

a) Bleeding time (BT);
b) Coagulation time (CT);
c) Prothrombin time (PT);
d) Partial thromboplastin time (PTT).

38. If a fibrinolytic drug is used for the treatment of acute myocardial infarction, the adverse effect most likely to occur is:

a) Acute renal failure;
b) Development of antiplatelet antibodies;
c) Encephalitis secondary to liver dysfunction;
d) Hemorrhagic stroke.

39. Thrombolytic therapy with streptokinase is contraindicated in:

a) Supraventricular tachycardia; c) Recent cerebral bleeding;
b) Recent trauma; d) Recent surgery.

40. Epsilon amino-caproic acid is used to reduce bleeding due to:

a) Heparin; b) Warfarin; c) Thrombocytopenia; d) Hyperplasminemia.

GENERAL ANESTHETICS. ETHYL ALCOHOL

1. Definition of general anesthesia includes all of the following items except:

a) Analgesia; d) Skeletal muscle relaxation;
b) Amnesia; e) Unconsciousness.
c) Psychostimulation;

2. Choose the mechanisms of action of general anesthetics:

a) Inhibition of chlorine channels;
b) Inhibition of potassium channels;
c) Inhibition of glutamate receptors;
d) Inhibition of acetylcholine receptors.

3. Minimum Alveolar Concentration (MAC) of inhaled anesthetics is:

a) Concentration of inhaled anesthetics in inspired gas to prevent a response to a surgical incision over 50 % (effect of analgesia occurs);

b) Concentration of inhaled anesthetics in inspired gas to prevent a response to a surgical incision in the proximity of 100 % (effect of analgesia occurs);

c) Concentration of inhaled anesthetics in the blood causing apnea in the proximity of 50 %;

d) Concentration of inhaled anesthetics in inspired gas causing surgical anesthesia in the proximity of 50 %.

4. Define the drug for inhalation anesthesia with the highest level of MAC:

a) Halothane; c) Nitrious oxide; e) Propofol.
b) Isoflurane; d) Sevoflurane;

5. Anesthetic potency is described by:

a) Alveolar ventilation; c) Concentration in the inspired gas;
b) Blood-tissue transfer; d) Minimal alveolar concentration.

6. Ideal anesthetic drug should:

a) Induce slow general anesthesia and be rapidly reversible upon discontinuation;

b) Induce rapid general anesthesia and be slowly reversible upon discontinuation;

c) Induce rapid general anesthesia and be rapidly reversible upon discontinuation;

d) Induce slow general anesthesia and be slowly reversible upon discontinuation;

e) Speed of induction of general anesthesia makes no difference.

7. Type of general anesthesia based on a combination of general anesthetics with drugs potentiated them (opioid analgesics, anxiolytics, skeletal muscle relaxants and others) is:

a) Mixed anesthesia;
b) Potentiated anesthesia;
c) Basis anesthesia;
d) Induction of anesthesia;
e) Neuroleptanalgesia.

8. Method of general anesthesia beginning that provides rapid, safety and effective loss of consciousness, analgesia and skeletal muscle relaxation:

a) Mixed anesthesia;
b) Potentiated anesthesia;
c) Basis anesthesia;
d) Induction of anesthesia;
e) Neuroleptanalgesia.

9. Type of general anesthesia achieved by the usage of two or more general anesthetics at the same time is:

a) Mixed anesthesia;
b) Potentiated anesthesia;
c) Basis anesthesia;
d) Induction of anesthesia;
e) Neuroleptanalgesia.

10. Features of halothane:

a) Has high narcotic activity;
b) General anesthesia occurs rapidly — in 3–5 minutes;
c) Mild stage of excitement;
d) Recovery is rapid;
e) Explosive.

11. Side-effects of halothane:

a) Tachycardia;
b) Bradycardia;
c) Arrhythmias;
d) An increase in blood pressure;
e) Hypotension.

12. Nitrous oxide:

a) Has high narcotic activity;
b) Has low narcotic activity;
c) Has high analgesic activity;
d) Is poor skeletal muscle relaxant;
e) Is non-irritant;
f) Has little effect on inner organs.

13. Features of propofol:

a) General anesthesia occurs rapidly — in 30–40 seconds;
b) Duration of action is 3–10 minutes;
c) Duration of action is 1.5–3 hours;
d) Recovery is rapid;
e) Has severe depression of consciousness after recovery.

14. Features of sodium thiopental:

a) Has a rapid onset;
b) Mild stage of excitement;
c) Severe stage of excitement;
d) Duration of general anesthesia is 20–30 minutes;
e) Stimulation of vasomotor and respiratory centers.

15. Side effects of ketamine:

a) Decrease in blood pressure;
b) Increase in blood pressure;
c) Tachycardia;
d) Hallucinations after recovery;
e) Bradycardia.

16. Features of ketamine:

a) Noncompetitive antagonist of NMDA-receptors;
b) Causes deep surgical anesthesia;
c) Causes immobility, loss of consciousness and analgesia;
d) Has little effect on skeletal muscle tone;
e) Causes marked relaxation of skeletal muscles.

17. The following drugs CANNOT be applied to restore blood pressure after the usage of halothane:

a) Epinephrine;
b) Phenylephrine;
c) Norepinephrine;
d) Ephedrine;
e) Atropine.

18. Pharmacokinetic features of ethyl alcohol:

a) Peak blood concentration is reached within 30 minutes;
b) It is not absorbed in the stomach;
c) Penetrates through blood brain barrier;
d) Can not reach central nervous system;
e) Metabolized in the kidney.

19. Pharmacokinetic features of ethyl alcohol:

a) Is metabolized in the liver;
b) Can be eliminated by the lungs and kidney;
c) The last step of ethyl alcohol metabolism is the formation of acetaldehyde;
d) The enzyme acetaldehydrogenase is not involved in the process of metabolizing of ethyl alcohol.

20. Pharmacodynamic effects of ethyl alcohol:

a) High doses can induce respiratory depression and coma;
b) The ethyl alcohol can induce euphoria only;
c) Alcohol causes sedation, behavioral changes;
d) Alcohol does not change any mental processes.

21. Pharmacodynamic effects of ethyl alcohol:

a) Depressive effect on myocardial contractility;
b) May cause severe orthostatic hypotension and syncope;
c) It is up-to-date drug to delay the premature labors;
d) Alcohol fatty liver, hepatitis and cirrhosis are noticed.

22. Pharmacodynamic effects of ethyl alcohol:

a) Can induce tolerance and dependence;
b) Heavy alcohol consumption leads to reduction of blood pressure;
c) Has no teratogenic effect;
d) Has ability to induce fetal alcohol syndrome;
e) Dilated cardiomyopathy is observed.

23. Features of disulfiram:

a) Reduces toxicity of ethyl alcohol;
b) Can be useful in case of acute poisoning with ethyl alcohol;
c) Is used to treat chronic alcoholism;
d) Inhibitor of NMDA receptors;
e) Inhibitor of aldehyde dehydrogenase;
f) Taking the alcohol after disulfiram causes headache, sweating, vomiting, confusion, hypotension.

ANALGESICS

1. Morphine acts on antinociceptive system in the following way:

a) Stimulates the synthesis of opioid peptides;
b) Intensify the release of opioid peptides;
c) Stimulates opioid receptors;
d) Block the inactivation of opioid receptors;
e) Block presynaptic opioid receptors.

2. The opioid antagonist is:

a) Naloxone; b) Droperidol; c) Clonidine; d) Nefopam; e) Ibuprofen.

3. Mechanism of vomiting upon the application of morphine:

a) Irritation of receptors of stomach mucosal membrane;
b) Intracranial hypertension;
c) Excitement of chemoreceptors in the emetic trigger zone;
d) Acting on vestibular system;
e) Stimulation of pharynx mechanoreceptors.

4. What drug can be combined with phentanyl for the purpose of neuroleptanalgesia:

a) Acetylsalicylic acid; c) Paracetamol; e) Piracetam.
b) Droperidol; d) Diazepam;

5. Features of narcotic analgesics:

a) Increase respiratory volume;
b) Relieve pain of any genesis;
c) Facilitate sleep onset;
d) Cause drug dependence;
e) Have anti-inflammatory activity.

6. Mechanisms of obstipation caused by morphine:

a) Block of motilin receptors;
b) Inhibition of secretion of digestive glands;
c) Spasm of intestine sphincters;
d) Inhibition of intestinal peristalsis;
e) A decrease in intestinal smooth muscle tone.

7. Methadone:

a) Is a synthetic opioid used in opioid addiction;
b) Is contraindicated in hepatic and renal impairment;
c) Steady-state plasma concentration may take 10 days to achieve;
d) Has a short half-life;
e) May prolong QT interval;
f) Is a racemic mixture of two enantiomers;
g) Has a higher affinity for delta receptors than morphine;
h) Has a long half-life;
i) Has a reduced clearance in acidic urine;

8. Fentanyl:

a) Is a potent kappa agonist;
b) Is ideal for transmucosal and transdermal administration;
c) Has a poor systemic level after transdermal administration;
d) Is available only for intravenous administration;
e) Has high risk of abuse.

9. Route of administration of opioids:

a) Bioavailability of fentanyl is higher than that of morphine via sublingual route;
b) Intranasal preparations are mainly used for breakthrough pain;
c) Morphine administered by inhalation route has a bioavailability of 55 %;
d) Fentanyl iontophoretic patches have technical difficulties such as corrosion;
e) Subcutaneous route is mainly used for cancer pain.

10. Features of nonnarcotic analgesics:

a) Relieve pain of any genesis;
b) Decrease respiratory volume;
c) Cause drug dependence;
d) Relieve pain of inflammatory genesis;
e) Have anti-inflammatory activity;
f) Have antipyretic activity.

11. Peripheral COX inhibitors are:

a) Ibuprofen;
b) Acetylsalicylic acid;
c) Keterolac;
d) Metamizol;
e) Paracetamol.

12. Features of acetylsalicylic acid:

a) Is pain reliever;
b) Anti-inflammatory activity;
c) Antipyretic activity;
d) Antiplatelet action;
e) Cough reduction.

13. Features of paracetamol:

a) Pain reliever;
b) Anti-inflammatory activity;
c) Antipyretic activity;
d) Antiplatelet action;
e) Inhibition of intestinal peristalsis.

14. Features of ibuprofen:

a) Pain reliever;
b) Anti-inflammatory activity;
c) Inhibition of intestinal peristalsis;
d) Emetogenic activity;
e) Anticonvulsant action.

15. Features of keterolac:

a) Antipyretic activity;
b) Anti-inflammatory activity;
c) Stimulation of intestinal peristalsis;
d) Diuretic activity;
e) Analgesic activity.

16. Features of metamizole:

a) Pain reliever;
b) Antipyretic activity;
c) Causes miosis;
d) Sedative-hypnogenic activity;
e) Antiemetic activity.

17. Drugs that are counterindicated in case of intracranial hypertension:

a) Ketamine;
b) Morphine;
c) Phentanyl;
d) Propofol;
e) Thiopental sodium.

18. Neurovascular headache:

a) Is related to the dura mater and its associated vasculature;

b) Vasodilation induced as a result of pain is mostly limited to ophthalmic division of trigeminal nerve;

c) Trigeminovascular system is involved;

d) Parasympathetic autonomic involvement leads to lacrimation and nasal stuffiness;

e) Cranial pain can cause vasodilation.

19. Characteristics of migraine:

a) Represents sensitivity to normal sensory input;

b) Familial hemiplegic migraine develops because of involvement of potassium channel;

c) Sporadic hemiplegic migraine involves glutamate receptors;

d) Changes in cerebellum are seen;

e) SUNCT (**S**hort-lasting **u**nilateral **n**euralgiform headache with **c**onjunctival injection and **t**earing) is typical.

20. Diagnosis of migraine:

a) Is generally a continuous pain;
b) Aura is present in 80 % of patients;
c) Aura is more frequently present in tension-type headache;
d) Migraine is more frequently seen in females;
e) Headache in response to triggers is characteristic.

21. Characteristics of chronic migraine headache:

a) Headache must respond to triptans for at least 8 days for its diagnosis;
b) Is seen in 20 % of the population;
c) Psychosocial factors are an association;
d) History of the head and neck is a major risk factor;
e) Typically ipsilateral autonomic features are seen.

22. Episodic migraine:

a) Is seen in males more often than in females;
b) Is mostly unilateral;
c) Is frequently associated with vomiting;
d) Auras are present in 60 % of patients;
e) Aura consists of positive features.

23. Classic migraine:

a) Presents with only visual auras;
b) Food items may precipitate migraine;
c) Seizures may be seen;
d) Triptans are effective in 100 % of the population;
e) Symptoms become less pronounced with age.

ANTICONVULSANTS

1. All of the following adverse effects are associated with carbamazepine except:

a) Teratogenicity; c) Decrease in antidiuretic hormone;
b) Neurotoxicity; d) Hypersensitivity.

2. Which of the following statements about anticonvulsants is false?

a) Phenytoin and carbamazepine act by prolonging the inactivated state of Na^+ channels;

b) Carbamazepine can be used in trigeminal neuralgia;

c) Diazepam is anticonvulsant drug;

d) Lamotrigine mainly acts by causing GABA mediated Cl^- channels.

3. A pregnant woman with primary generalized tonic-clonic seizures, well controlled on phenobarbital, stops taking her antiepileptic medication 4 month into her pregnancy. Which of the following best describes her decision?

a) Her decision is wrong, as the risk of teratogenecity was the highest in the first trimester;

b) Her decision is wrong because antiepileptic drugs do not increase the risk of fetal malformation;

c) Her decision is correct as the risk of seizures is reduced in pregnancy;

d) Her decision is wrong but her medication needs to be changed and a newer antiepileptic drug added.

4. All of the following statements about phenytoin are true except:

a) It follows saturation kinetics;

b) Antiepileptic activity depends on plasma concentration;

c) Does not depress CNS;

d) Cerebellar degeneration occurs on long-term administration.

5. Ethosuximide can be used for the treatment of:

a) Generalized tonic-clonic seizures;

b) Absence seizures;

c) Complex seizures;

d) Myoclonic seizures.

6. Which of the following statement about phenytoin is true?

a) It follows zero order kinetics;

b) It is not teratogenic;

c) It is excreted unchanged in urine;

d) It does not induce microsomal enzymes.

7. The drug of choice for prevention of seizures in a patient with severe preeclampsia is:

a) Phenytoin; b) Magnesium sulfate; c) Diazepam; d) Nefidipine.

8. All of the following items are adverse effects of sodium valproate except:

a) Weight gain; b) Alopecia; c) Liver damage; d) Osteomalacia.

9. Which statement about carbamazepine is true?

a) Used in trigeminal neuralgia;

b) Is an inhibitor of cytochrome P450;

c) Can cause megaloblastic anemia;

d) It is drug of choice for status epilepticus.

10. Which of the following drugs can be useful in status epilepticus?

a) Diazepam; b) Ethosuximide; c) Phenytoin; d) Topiramate.

11. Which of the following drugs is not an anticonvulsant?

a) Phenytoin; b) Selegeline; c) Topiramate; d) Phenobarbital.

12. Which antiepileptic drug does not act via inhibition of sodium channels?

a) Vigabatrin; b) Carbamazepine; c) Lamotrigine; d) Phenytoin.

13. Granulocytopenia, gingival hyperplasia and facial hirsutism are all possible side effects of one of the following anticonvulsant drug:

a) Phenytoin; b) Valproate; c) Carbamazepin; d) Phenobarbital.

14. Drug of choice for myoclonic epilepsy in pregnancy is:

a) Carbamazepin; b) Valproate; c) Phenobarbital; d) Phenytoin.

15. The following statement about phenytoin is false:

a) Induces microsomal enzymes;
b) At very low doses, zero order kinetics occurs;
c) Higher the dose, higher the half-life;
d) High protein binding.

16. Which of the following antiepileptic agents acts on the GABAergic system to decrease the uptake of GABA into neurons and glial cells?

a) Vigabatrin; b) Phenytoin; c) Gabapentin; d) Tiagabane.

17. A patient with recent-onset primary generalized epilepsy develops drug reaction and skin rash due to phenytoin. The most appropriate course of action is:

a) Shift to clonazepam;
b) Restart phenytoin after 2 weeks;
c) Shift to sodium valproate;
d) Shift to ethosuximide.

18. Adverse effect of phenytoin include all of the following disorders except:

a) Lymphadenopathy; b) Ataxia; c) Hypercalcemia; d) Hirsutism.

19. Which of the folllowing pairs is matched correctly?

a) Gabapentin — GABA transaminase inhibitor;
b) Carbamazepine — Na^+ channel blocker;
c) Lamotrigine — NMDA blocker;
d) Tiagabine — increases release of GABA.

20. Which of the following statements about vigabatrine is true?

a) Blocks neuronal reuptake of GABA;
b) Drug of choice in absence seizures;
c) Life threating skin disorders may occur;
d) Visual disturbances may occur.

ANTIPARKINSONIAN DRUGS

1. Drugs used for the treatment of Parkinson's disease include:

a) Levodopa; c) Bromocriptine;
b) Diazepam; d) Benserazide.

2. All the following statements about levodopa are correct except:

a) Phenothiazines reduce its efficacy;
b) It is a prodrug;
c) Pyridoxine reduces effect of levodopa in Parkinsonism;
d) Domperidone blocks levodopa induced emesis and its therapeutic potential.

3. Which of the following agents enhances the bioavailability of levodopa in patients with Parkinson's disease:

a) Amantadine; c) Entacapone;
b) Carbidopa; d) Selegeline.

4. A patient with Parkinsonism is treated by levodopa. If Vitamin B complex is administered concurrently to the patient:

a) The action of levodopa in the brain will be potentiated;
b) Decarboxylation of levodopa in brain will be decreased;
c) Side effects will be reduced;
d) It will result in decreased efficacy.

5. Which of the following statements is false?

a) Amantadine causes ankle edema;
b) Levodopa is effective in reducing tremor;
c) Amantadine is more effective than levodopa;
d) Anti-muscarinic agents are effective in drug induced Parkinsonism.

6. Drugs causing Parkinsonism include:

a) Bromocriptine; d) Amantadine;
b) Phenothiazine; e) Carbidopa.
c) Haloperidol;

7. Entacapone may be useful in patients treated with levodopa-carbidopa combination because it:

a) Activates COMT;
b) Decreases formation of 3-OMD;
c) Inhibits monoamine oxidase type B;
d) Inhibits dopamine uptake.

8. Which of the following adverse effects of levodopa is not minimized even after combining it with carbidopa:

a) Involuntary movements; c) Cardiac arrhythmia;
b) Nausea and vomiting; d) «On-off» effect.

9. Entacapone is an antiparkinsonian drug. It acts by:

a) Agonism to dopamine receptors;
b) Antagonism to dopamine receptors;
c) Monoamine oxidase inhibition;
d) Cathecol-o-methyl transferase inhibition.

10. A compound X decreases the functional activities of several CNS neurotransmitters including dopamine, epinephrine and serotonin. At high doses it may cause Parkinsonism like extrapyramidal system dysfunction. Which of the following can be X?

a) Baclofen; b) Diazepam; c) Ketamine; d) Reserpine.

11. Which agent should not be administered with levodopa?

a) Carbidopa; c) Vitamin B complex;
b) MAO inhibitors; d) Benserazide.

12. Preparation of choice in drug induced parkinsonism is:

a) Levodopa; b) Amantadine; c) Carbidopa.

13. In the treatment of Parkinsonism, L-Dopa is combined with carbidopa mainly:

a) To decrease the treatment duration;
b) To decrease central side effects of L-Dopa;
c) To decrease effectiveness of L-Dopa;
d) To increase crossing of L-Dopa through BBB.

14. Antiparkinsonian drug that is a selective COMT-inhibitor:

a) Entacapone; b) Benserazide; c) Pergolide; d) Nacom.

15. Correct statement about antiparkinsonian drugs:

a) Amantadine is a cholinergic drug;
b) Vitamin B_6 enhances the L-Dopa action;
c) COMT inhibitors prolong the action of L-Dopa;
d) There are no correct answers.

16. A 72-year-old patients with Parkinsonism complains of swollen feet. They are red, tender and very painful. You could clear up these symptoms within a few days if you tell the patient to stop taking:

a) Amantadine; b) Trihexyphenidyl; c) Bromocriptine; d) Levodopa.

ANXIOLYTIC AND SEDATIVE-HYPNOGENIC DRUGS

1. Anxiolytic effect is:

a) Ability to induce sleep;
b) Raising of mood;
c) Stimulation of CNS;
d) Reduction of depression;
e) Reduction of anxiety.

2. **Sedative-hypnogenic effect is:**
   a) Appearance of colorful dreaming;
   b) Deficiency of dreaming;
   c) Reduction of depression;
   d) Sedation and facilitation of sleep onset;
   e) Raising of mood.
3. **Anxiolytic effect can be useful in the following situations:**
   a) Decreased requirement of sleep;
   b) Panic;
   c) Psychic excitement;
   d) Sleepiness;
   e) Brain ischemia.
4. **Sedative-hypnogenic effect can be useful in the following situations:**
   a) Decreased requirement of sleep;
   b) Sleeplessness;
   c) Sleepiness;
   d) Brain ischemia;
   e) Psychic excitement.
5. **Melatonin can be applied in case of:**
   a) Decreased requirement of sleep;
   b) Clock zone changing for correction of biorhythms;
   c) Sleepiness;
   d) Brain ischemia;
   e) Psychic excitement.
6. **Effects of barbiturates:**
   a) Diarrhea;
   b) Leukopenia;
   c) Suppression of respiration;
   d) Anesthesia;
   e) Anticonvulsant activity;
   f) Bronchospasm;
   g) Gastrointestinal ulcers;
   h) Suppression of vasomotor center;
   i) Myorelaxation;
   j) Hearing disturbance;
   k) Antiplatelet effect;
   l) Antipyretic effect;
   m) Facilitation of the sleep onset;
   n) Reduction of the pain;
   o) An increase in the respiratory volume;
   p) Antipsychotic activity.

7. Effects of benzodiazepines:

a) Increase in bronchi tone;
b) Hematopoiesis disturbance;
c) Anticonvulsant activity;
d) Increase in gastrointestinal motility;
e) Hearing disturbance;
f) Sedative effect;
g) Hypnogenic effect;
h) Increase in respiratory volume;
i) Decrease in the tone of skeletal muscles;
j) Decrease in anxiety;
k) Anti-inflammatory effect.

8. Features of buspirone:

a) Has hypnogenic effect;
b) Reduction of anxiety;
c) Does not cause significant sedative effect;
d) Anticonvulsant activity;
e) Driving is not recommended upon the application of this drug;
f) Causes myorelaxation;
g) Effect occurs immediately after drug administration;
h) Hepatic metabolism is typical.

9. Mechanism of muscle tone reduction upon the application of benzodiazepines:

a) Calcium depletion in the sarcolemma;
b) Facilitates GABA-mediated reduction of muscle tone in the spinal cord;
c) Phosphodiesterase inhibition in the muscle fibers;
d) Block of neuromuscular transmission (high doses);
e) Accumulation of lactic acid in the muscle fiber.

10. Anticonvulsant activity of benzodiazepines is determined by:

a) Hypnogenic effect;
b) Inhibition of primary seizure pattern;
c) Increase in limbic system activity;
d) Decrease in cortex structures excitability;
e) Suppression of centers of medulla oblongata.

11. Hypnogenic activity of benzodiazepines is determined by:

a) Activation of epiphysis function;
b) Decrease in spontaneous activity of CNS;
c) Decrease in metabolic activity of CNS;
d) Decrease in cortex structures excitability;
e) Facilitation of NMDA-dependent signal flow in the neuronal network.

12. Mechanisms of action of benzodiazepines:

a) I increase in the duration of GABA-dependent chloric channel opening;
b) Increase in the rate of GABA-dependent chloric channel opening;
c) Inhibition of GABA-dependent ion channel;
d) Increase in the effectiveness of GABA-dependent synaptic inhibition;
e) Direct activation of GABA-receptor.

13. Mechanisms of action of barbiturates:

a) Increase in the duration of GABA-dependent chloric channel opening;
b) Increase in the rate of GABA-dependent chloric channel opening;
c) Inhibition of GABA-dependent ion channel;
d) Increase in the effectiveness of GABA-dependent synaptic inhibition;
e) Direct activation of GABA-receptor.

14. Define the sedative drugs without anxiolytic effect:

a) Alprazolam; c) Nitrazepam; e) Promethazine.
b) Diazepam; d) Diphenhydramine;

15. Features of zolpidem:

a) Driving is not recommended upon the application of this drug;
b) Causes mild myorelaxation;
c) Effect occurs immediately after drug administration;
d) Acts on GABA-dependent signal transmission;
e) Suppresses respiratory center;
f) Driving can be recommended upon the application of this drug;
g) Significant residual effect is typical;
h) Effect develops slowly (in a week);
i) Is antagonist of serotonin receptors;
j) Low toxicity.

ANTIPSYCHOTIC DRUGS

1. Antipsychotic drugs are applied in the following cases:

a) Ischemic stroke;
b) Depression;
c) Opioid withdrawal syndrome;
d) Schizophrenia.

2. Antipsychotic drugs are most effective in case of:

a) Panic disorder;
b) Manic depressive psychosis;
c) Positive symptoms;
d) Sleepiness;
e) Brain ischemia.

3. **Antipsychotic drugs cause:**
   a) Colorful dreaming;
   b) Hallucination;
   c) Memory improvement;
   d) Suppression of positive symptoms in case of psychosis;
   e) Sleep.

4. **The main properties of neuroleptics (antipsychotic drugs):**
   a) Intensify GABA-dependent suppression of CNS;
   b) Block dopamine receptors;
   c) Activate serotonin receptors;
   d) Block M-cholinergic receptors;
   e) Inhibit NMDA-receptors;
   f) Block α-adrenergic receptors;
   g) Activate M-cholinergic receptors.

5. **Features of antipsychotic drugs:**
   a) Increase agitation in patients with schizophrenia;
   b) Decrease skeletal muscle tone;
   c) Increase anxiety in healthy people;
   d) Reduce anxiety;
   e) Reduce vomiting;
   f) Induce psychic excitement;
   g) Cause extrapyramidal disorder;
   h) Increase prolactin secretion;
   i) Are effective in patients with Parkinson's disease;
   j) Can cause euphoria.

6. **Side effects of neuroleptics (antipsychotic drugs):**
   a) Hypertension;
   b) Sleepiness;
   c) Restlessness (akathisia);
   d) Decreased libido in men;
   e) Tardive dyskinesia (extrapyramidal symptoms);
   f) Gynecomastia;
   g) Increased libido in women.

7. **Effects of neuroleptics associated with acting on M-cholinergic receptors:**
   a) Extrapyramidal symptoms;
   b) Impotention;
   c) Sleeplessness;
   d) Constipation;
   e) Paralysis of accommodation.

8. **Effects of neuroleptics associated with acting on α-adrenoreceptors:**
   a) Giddiness;
   b) Gynecomastia;
   c) Orthostatic hypotension;
   d) Constipation;
   e) Increased libido in women.

9. Effects of neuroleptics associated with acting on dopamine receptors in extrapyramidal system:

a) Decreased libido in men;
b) Constipation;
c) Tardive dyskinesia;
d) Restlessness (akathisia);
e) Sleepiness.

10. Effects of neuroleptics associated with acting on dopamine receptors in hypothalamus:

a) Orthostatic hypotension;
b) Restlessness (akathisia);
c) Increased libido in women;
d) Gynecomastia in men;
e) Tardive dyskinesia.

11. Effects of neuroleptics associated with acting on prolactin secretion:

a) Gynecomastia in men;
b) Ejaculation disorder;
c) Induction of lactation;
d) Increased libido in women;
e) Parkinson's syndrome.

ANTIDEPRESSANTS, NORMOTHYMIC DRUGS

1. Set up a correspondence between the pharmacological group:

a) Antidepressant, serotonin reuptake inhibitors;
b) Antidepressant, norepinephrine reuptake inhibitor;
c) Antidepressant, MAO inhibitor;
d) Neuroleptic;
e) Normothymic.

and drug:

1) Amitriptyline;
2) Fluoxetine;
3) Clozapine;
4) Carbamazepine;
5) Moclobemid.

2. Normothymic (antimanic) drugs can be administered in case of:

a) Panic disorder;
b) Manic-depressive psychosis;
c) Schizo-affective psychosis;
d) Sleppiness;
e) Brain ischemia.

3. Select the groups of drugs that can be useful in the management of manic phase of manic-depressive psychosis:

a) Antidepressants;
b) Salts of lithium;
c) Nootropic drugs ;
d) Anticonvulsants;
e) Benzodiazepines.

4. Pharmacokinetic properties of lithium:

a) Is metabolized in the liver;
b) Is not metabolized;
c) Tightly binds to proteins;
d) Distribution in the total body water;
e) Reaches the plasma peak in several weeks.

5. Supposed mechanisms of antimanic activity of lithium salts:

a) Inhibition of sodium pump activity in the neuronal membrane;
b) Shift of secondary messengers activity;
c) Block of D_2-receptors;
d) Shift of cation distribution in intra-and intercellular compartments;
e) Modification of neurotransmitters release: norepinephrine, dopamine, etc.

6. Side effects of lithium salts:

a) Raising of arterial blood pressure;
b) Hypertrophy of thyroid gland;
c) Nephrogenic diabetes insipidus;
d) Secondary immunodeficiency;
e) Parkinson's disease.

7. Antidepressants can be administered in case of:

a) Panic disorder;
b) Endogenous depression;
c) Sleepiness;
d) Brain ischemia;
e) Psychic excitement;
f) Major depressive disorder.

8. Choose the possible clinical uses of antidepressants:

a) Post-traumatic stress disorder;
b) Obsessive-compulsive disorder;
c) Activation of respiratory center;
d) Treatment of bronchial asthma;
e) Schizophrenia;
f) Status epilepticus;
g) Neuropathic pain and the pain associated with fibromyalgia;
h) Premenstrual dysphoric disorder;
i) Stress urinary incontinence.

9. Mechanism of action of tricyclic antidepressants:

a) Direct activation of adrenergic receptors;
b) Nonselective inhibition of monoamines reuptake (epinephrine, norepinephrine);
c) Block the inactivation of norepinephrine by MAO;
d) Selective inhibition of norepinephrine reuptake;
e) Block the inactivation of norepinephrine by COMT.

10. Set up a correspondence between antidepressants:

a) Sertraline;
b) Amitriptyline;
c) Moclobemide;
d) Tianeptine;
e) Mirtazapine.

and their mechanisms of action:

1) MAO inhibitor;
2) Serotonin reuptake inhibitor;
3) Strengthens neuronal serotonin reuptake;
4) Inhibitor of presynaptic α_2-adrenergic receptor;
5) Norepinephrine reuptake inhibitor.

11. Features of tricyclic antidepressants:

a) Increase in arterial blood pressure;
b) Obstipation and urinary retention;
c) Relive pain, potentiate analgesics;
d) Increase exercise tolerance;
e) Weight gain.

12. Biochemical effects of MAO inhibitors (group of antidepressants):

a) Inhibition of MAO activity in presynaptic terminals;
b) Inhibition of MAO activity in postsynaptic terminals;
c) Inhibition of MAO activity in synaptic cleft;
d) Increase in mediator concentration in vesicles;
e) Increase in mediator concentration in the synaptic cleft.

13. Effects of MAO inhibitors:

a) Cachexia;
b) Decreased blood pressure;
c) Sexual dysfunction, loss of libido;
d) Lack of significant sedation;
e) Alcohol decreases sedative effect of this drugs.

14. Correct affirmation about tricyclic antidepressants:

a) Are usually administered once a day;
b) Clinical effect develops in 2–3 weeks of daily application;
c) Are administered 3 and more times a day because of short half-life time;
d) Clinical effect occurs on the first few days;
e) Drug effect ends a few days after delay.

15. Select side effects of tricyclic antidepressants:

a) Dry mouth, constipation, urinary retention;
b) Hypertension;
c) Orthostatic hypotension;
d) Weight gain, sedation.

16. Correct assertions about serotonin reuptake inhibitors:

a) Are usually administered once a day;
b) Functional accumulation is typical;
c) Are mainly administered parenterally;
d) Clinical effect occurs on the first few days;
e) Side effects occur on the first few days.

17. Select side effects of selective serotonin reuptake inhibitors:

a) Palpitation;
b) Insomnia or hypersomnia;
c) Hypotension;
d) Gastrointestinal symptoms;
e) Loss of libido, delayed orgasm.

18. Features of MAO inhibitors:

a) Functional accumulation is typical;
b) Clinical effect develops in 2–3 weeks of daily application;
c) Combination with serotonin reuptake inhibitors is recommended;
d) May cause sleeplessness;
e) Side effects occur on the first few days.

19. Select adverse effects of monoamine oxidase inhibitors:

a) Orthostatic hypotension;
b) Loss of weight;
c) Weight gain;
d) Dry mouth, constipation, urinary retention.

20. What symptom may appear while eating tyramine containing food (red vine, cheese, etc.), and taking MAO inhibitors?

a) Severe hypotension;
b) Obstipation;
c) Bronchospasm;
d) Hypertensive crisis;
e) Insulin resistance.

21. Combination of what drugs may cause the «serotonin syndrome»:

a) MAO inhibitors and serotonin reuptake inhibitors;
b) Tricyclic antidepressants and serotonin reuptake inhibitors;
c) Two drugs of serotonin reuptake inhibitors;
d) Phenelzine and fluoxetine;
e) Fluoxetine and doxepin.

22. Select the antidepressants:

a) Buspirone;
b) Fluoxetine;
c) Flumazenil;
d) Tianeptine;
e) Moclobemide;
f) Sertraline;
g) Amobarbital.

PSYCHOSTIMULANTS. NOOTROPIC DRUGS AND TONICS

1. Nootropic drugs:

a) Reduce anxiety;
b) Facilitate sleep onset;
c) Stimulate the immune system;
d) Improve cognitive skills;
e) Increase brain resistance to hypoxia.

2. Effects of piracetam:

a) Increased physical performance with a single dose;
b) Increase in mental capacity with the use of a single dose;
c) Do not act on mental capacity with the use of a single dose;
d) Memory improvement in patients with brain disorder;
e) Learning improvement in patients with organic brain disorder.

3. Indications of nootropic drugs:

a) For rapid stimulation of mental capacity;
b) For rapid increasing physical endurance;
c) Correction of posttraumatic mental disorders in children and adults;
d) Correction of mental disorders caused by cerebrovascular disturbance;
e) Prophylaxis of Parkinson's disease.

4. Select cholinesterase inhibitors that can be useful in the treatment of Alzheimer's disease:

a) Donepezil; c) Nimodipine;
b) Memantine; d) Rivastigmine.

5. Select the mechanism of action of memantine:

a) Improving the metabolic processes;
b) Improving the blood flow in the brain;
c) Noncompetive block of NMDA receptors.

6. Define the group of nimodipine:

a) Psychostimulant; b) Analeptic; c) Nootropic; d) Tonic.

7. Define the group of memantine:

a) Psychostimulant; b) Analeptic; c) Nootropic; d) Tonic.

8. Define adaptogens:

a) Tianeptine; d) Piracetam;
b) Pantocrin; e) Eleutherococ liquid extract.
c) Ginseng tincture;

9. Define the group of caffeine:

a) Psychostimulant; b) Analeptic; c) Nootropic; d) Tonic.

10. Choose analeptics:

a) Caffeine sodium benzoate; d) Aethimisol;
b) Mezocarb; e) Doxapram.
c) Bemegride;

11. Define the possible indications of doxapram:

a) Respiratory depression caused by anesthesia;
b) Respiratory depression caused by chronic obstructive pulmonary disease;
c) Myocardial infarction;
d) Attack of stable angina.

12. Correct assertions about aethimisol:

a) Causes bronchospasm;
b) Increases concentration of glucocorticosteroids in blood plasma;
c) Stimulates the respiratory center;
d) Suppresses the respiratory center;
e) Can be used as analeptic.

13. Correct assertions about bemegride:

a) Causes psychomotor agitation in high doses;

b) Can be used in case of poisoning with barbiturates and general anesthetics;

c) Stimulates the respiratory center;

d) Is used as a stimulator of gastrointestinal motility;

e) Is administered parenterally;

f) Is administered orally.

HYPOTHALAMIC AND PITUITARY HORMONES

1. The following drugs are the hypothalamic hormones and their synthetic analogues:

a) Thyrotropin;
b) Sermorelin;
c) Oxytocin;
d) Octreotide;
e) Somatropin (growth hormone);
f) Gonadorelin.

2. Tetracosactide is an effective stimulator of secretion of:

a) Glucocorticoids;
b) Androgenic steroids;
c) Thyroxine;
d) Norepinephrine;
e) Insulin.

3. Choose the correct assertions about tetracosactide:

a) Is synthetic analogue of corticotrophin;
b) Immunogenic activity is weak;
c) Is administered in case of Cushing' syndrome;
d) Is applied in patients with secondary adrenal insufficiency.

4. Define the name of recombinant form of growth hormone:

a) Sermorelin; b) Goserelin; c) Somatropin; d) Tetracosactide.

5. Select the indications of growth hormone:

a) Acromegaly;
b) Diabetes type II;
c) Prader-Willi syndrome;
d) Turner syndrome;
e) Treatment of wasting in patient with AIDs.

6. Define the influence of growth hormone on the activity of cytochrome P450 isoforms:

a) Increases the activity;
b) Has no influence;
c) Decreases the activity.

7. Define somastatine synthetic analogues:

a) Octreotide; b) Pegvisomant; c) Danazol; d) Lanreotide.

8. Choose the classification of octreotide:

a) Gonadorelin synthetic analogue;
b) Synthetic analogue of thyrotropin-releasing hormone;
c) Growth hormone receptor antagonist;
d) Somatostatine synthetic analogue.

9. Select the usage of octreotide and lanreotide:

a) Acromegaly;
b) Induction of ovulation;
c) Hormone-secreting tumors: gastrinoma, insulinoma, VIPoma;
d) Prader–Willi syndrome;
e) Diarrhea — secretory, HIV-associated, chemotherapy induced.

10. Define the growth hormone receptor antagonist:

a) Octreotide; b) Pegvisomant; c) Danazol; d) Lanreotide.

11. The main indication of pegvisomant:

a) Acromegaly;
b) Induction of ovulation;
c) Hormone-secreting tumors: gastrinoma, insulinoma, VIPoma;
d) Prader–Willi syndrome;
e) Diarrhea — secretory, HIV-associated, chemotherapy induced.

12. The pulsatile administration of gonadotropin-releasing hormone is responsible for:

a) Stimulation of gonadotropins;
b) Inhibition of the release of follicle-stimulating and luteinizing hormones.

13. The nonpulsatile administration of gonadotropin-releasing hormone leads to:

a) Inhibition of the release of follicle-stimulating and luteinizing hormones both in women and men;
b) Hypogonadotropic hypogonadism;
c) Stimulation of the release of follicle-stimulating and luteinizing hormones.

14. Define the synthetic analogues of gonadorelin:

a) Gosereline; c) Urofollitropin; e) Buserelin.
b) Triptoreline; d) Menotropin;

15. The main indication of bromocriptin is:

a) Prostate cancer; c) Hyperprolactinemia;
b) Endometriosis; d) Central precocious puberty.

16. Select follicle stimulating hormones:

a) Urofollitropin; c) Lutropin alfa;
b) Follitropin alfa; d) Menotropins.

17. Select preparations with luteinizing activity:

a) Choriogonadotropin alfa;
b) Urofollitropin;
c) Follitropin alfa;
d) Lutropin alfa;
e) Menotropins.

18. Choose the hormone which has both follicle stimulating hormone and luteinizing hormone in the ratio 1 : 1 in its structure:

a) Urofollitropin;
b) Lutropin alfa;
c) Menotropins;
d) Pegvisomant.

19. Posterior pituitary lobe hormone drugs and their synthetic analogues are:

a) Melatonin;
b) Oxytocin;
c) Goserelin;
d) Urofollitropin;
e) Desmopressin.

20. Choose clinical application for oxytocin:

a) Inducing of labor;
b) Suppress the vaginal bleeding in postpartum period;
c) Premature labor;
d) Previous extensive uterine surgery.

21. Correct assertion about desmopressin are:

a) It is a vasopressin derivate;
b) It has diuretic activity;
c) Can be applied for labor induction;
d) Is used in case of diabetes insipidus;
e) Can be administered in patients with diabetes type II.

THYROID AND ANTITHYROID HORMONE DRUGS. REGULATORS OF CALCIUM HOMEOSTASIS

1. The excessive secretion of parathyroid hormone may cause:

a) Exophtalm («bulging eyes»), tachycardia, raised body temperature;
b) Apyretic tetanus, cataract, psychosis;
c) Hypoglycemia, raised body temperature;
d) Water retention, raised blood pressure, increase in glucose concentration;
e) Suppression of the immune system.

2. Drug is applied in case of decreased level of thyroid hormones:

a) Propylthiouracil;
b) Thiamazole;
c) Levothyroxine sodium;
d) Teriparatide;
e) Radioactive iodine.

3. Choose thyroid hormone drugs:

a) Sodium levothyroxine;
b) Radioactive iodine;
c) Lyothyronine;
d) Thiamazole.

4. **Which of the following statements about iodine is false?**
   a) Contraindicated in hyperthyroidism;
   b) Causes iodism;
   c) Inhibits the release of thyroxine;
   d) Inhibits the synthesis of iodo thyroxine and iodo thyronine.

5. **Conversion of T_4 to T_3 is inhibited by:**
   a) Propranolol; c) Amiodarone;
   b) Propylthyouracil; d) Thiamazole.

6. **T_3 in comparison with T_4:**
   a) Is more potent; c) Has shorter half-life;
   b) Has longer half-life (7 days); d) Requires multiple daily doses.

7. **Choose the symptoms of hypothyroidism:**
   a) Pale, cool, puffy skin, face and hands;
   b) Warm, moist skin;
   c) Decreased peripheral vascular resistance;
   d) Increased heart rate, stroke volume, cardiac output;
   e) Increased peripheral vascular resistance;
   f) Decreased heart rate, stroke volume, cardiac output;
   g) Increased appetite, increased frequency of bowel movements;
   h) Decreased appetite, decreased frequency of bowel movements.

8. **Choose the symptoms of hyperthyroidism:**
   a) Pale, cool, puffy skin, face and hands;
   b) Warm, moist skin;
   c) Decreased peripheral vascular resistance;
   d) Increased heart rate, stroke volume, cardiac output;
   e) Increased peripheral vascular resistance;
   f) Decreased heart rate, stroke volume, cardiac output;
   g) Increased appetite, increased frequency of bowel movements;
   h) Decreased appetite, decreased frequency of bowel movements.

9. **The mechanism of action of propylthiouracil:**
   a) Block iodine organification;
   b) Block uptake of iodide by the gland;
   c) Inhibition of peripheral deiodination of T_4 to T_3;
   d) Direct destruction of thyroid gland.

10. **In comparison with thiamazole propylthiouracil:**
    a) Do not block uptake of iodide by the gland;
    b) Blocks iodine organification;
    c) Inhibits peripheral conversion of T_4 to T_3.

11. **Select iodine isotope that is used for TREATMENT of thyrotoxicosis:**
    a) ^{126}I; b) ^{131}I; c) ^{123}I; d) ^{124}I.

12. Benefits of radioactive iodine in the treatment of thyrotoxicosis:

a) Has long half-life (5 days);
b) Requires one injection;
c) Low expense;
d) Painful procedure;
e) Absence of pain;
f) Is highly effective.

13. Select a true statement about radioactive iodine:

a) Has ability to induce genetic damage;
b) Has ability to induce leukemia;
c) Has ability to induce neoplasia;
d) None of all above.

14. Choose correct statements about β-blockers:

a) Cause clinical improvement of hyperthyroid symptoms;
b) Reduce the level of thyroid hormones substantially;
c) Inhibit peripheral conversion of T_4 to T_3;
d) Can be useful only in diagnostic purposes.

15. Choose the correct way to treat hypothyroidism:

a) Only levothyroxine can be administered;
b) The combination of levothyroxine plus liothyronine is also effective;
c) Thyroxine should be administered on an empty stomach;
d) Food has no influence on absorption of thyroxine;
e) It takes 6–8 weeks to reach steady state concentration, thus dosage changes should be made slowly;
f) The doctor has no need to check the level of TSH and free thyroxine.

16. Antithyroid drugs are administered for the treatment of:

a) Hypothyroid infantilism;
b) Congenital myxedema;
c) Loss of sexual power;
d) Hypothyroid status;
e) Thyrotoxicosis.

17. Select a correct assertion about calcitonin:

a) It increases the calcium absorption from intestine;
b) It increases a bone decalcination;
c) It increases the calcium concentration in the blood plasma;
d) Is administered in patients with acute hypocalcemia;
e) Is applied in case of osteoporosis.

18. Properties of thiamazole:

a) Inhibits the synthesis of thyroid hormones;
b) Can be applied in case of hyperthyroid status;
c) Can be administered in patients with hypothyroidism (goiter);
d) Has goitrogenic activity;
e) Inhibits the synthesis of thyrotropin alfa.

19. The production of active form of vitamin D is inhibited by:

a) Parathyroid hormone; c) High level of phosphorus;
b) High level of calcium; d) Fibroblast growth factor 23.

20. Ergocalciferol is:

a) Vitamin A; b) Vitamin D_2; c) Vitamin K; d) Vitamin D_3.

21. What is the net effect of parathyroid hormone (PTH) on the serum levels of calcium and phosphorus:

a) Level of calcium is decreased;
b) Level of calcium is increased;
c) Level of phosphorus is increased;
d) Level of phosphorus is decreased.

22. What is the net effect of vitamin D on the serum levels of calcium and phosphorus:

a) Level of calcium is decreased;
b) Level of calcium is increased;
c) Level of phosphorus is increased;
d) Level of phosphorus is decreased.

23. Choose preparations of biphosphonates:

a) Alendronic acid; d) Fusidic acid;
b) Valproic acid; e) Zolendronic acid.
c) Rizendronic acid;

24. Which of the following is a serious adverse effect seen with zolendronate:

a) Acute renal failure; c) Peptic ulcer;
b) Ventricular fibrillation; d) Anterior uveitis.

25. Biphosphonates act by:

a) Increasing the osteoid formation;
b) Increasing the mineralization of osteoid;
c) Decreasing the osteoclast mediated resorption of bone;
d) Decreasing the parathyroid hormone secretion.

26. Biphosphonates are used in the following cases:

a) Paget's disease; c) Postmenopausal osteoporosis;
b) Vitamin D excess; d) Hypercalcemia of malignancy.

27. Which of the following medications is most likely to cause osteoporosis in case of chronic use:

a) Lovastatin; b) Propranolol; c) Warfarin; d) Prednisolone.

28. A child has been diagnosed to be have vitamin D dependent rickets. The most appropriate vitamin D preparation for child is:

a) Calciferol; b) Cholecalciferol; c) Calcifediol; d) Calcitriol.

29. All of these drugs can be used in the treatment of postmenopausal osteoporosis:

a) Alendronic acid; b) Teriparatide; c) Calcium; d) Thyroxine.

30. A patient began taking alendronate and was advised to take plenty of water and remain in the standing position for at least half an hour till she had the first meal of the day. These instructions were given to reduce the risk of:

a) Cholelithiasis; c) Erosive esophagitis;
b) Constipation; d) Osteonecrosis.

31. Bone resorption is enhanced by:

a) PgD_2; b) PgF_2; c) PgE_2; d) PgI_2.

32. Calcitonin causes hypocalcemia by:

a) Inhibiting bone resorption;
b) Promoting osteolysis;
c) Decreasing renal tubular reabsorption of calcium;
d) Decreasing absorption of phosphorus.

33. Which of these drugs is the fastest calcium lowering agent:

a) Calcitonin; b) Alendronate; c) Rizendronate; d) Zolendronate.

34. Prevention or treatment of osteoporosis in postmenopausal women may be achieved by:

a) Calcium and vitamin D supplementation; c) Multivitamins.
b) Biphosphonates;

PANCREATIC HORMONES AND ANTIDIABETIC DRUGS

1. Hypoglycemic drugs that are sulfonylurea derivate:

a) Glybenclamide; c) Metformin; e) Gliclazide.
b) Acarbose; d) Glucagon;

2. Antidiabetic of biguanide group:

a) Glybenclamide; c) Metformin; e) Pioglitazone.
b) Acarbose; d) Glucagon;

3. Insulin of fast onset and short duration of action:

a) Human insulin; c) Insuline isophane;
b) Insulin-zinc suspension; d) Insulin glargine.

4. Long acting insuline:

a) Human insulin; c) Insuline isophane;
b) Insulin-zinc suspension; d) Insulin glargine.

5. First-choice drug for diabetes 1 type:

a) Glybenclamide; c) Metformin; e) Pioglitazone;
b) Acarbose; d) Glucagon; f) Insulin preparations.

6. Mechanisms of hypoglycemic activity of insulin are:

a) Increase in glucose uptake by insulin dependent tissue;
b) Increase in peripheral glucose disposal;
c) Activation of glycogenolysis;
d) Induction of lipolysis;
e) Inhibition of gluconeogenesis.

7. Insulin:

a) Has a strong hypoglycemic effect;
b) May cause hyperglycemia;
c) Is usually given orally;
d) Is used to treat diabetes mellitus;
e) Is used to relieve hyperglycemic coma.

8. Prolonged insulin:

a) Action develops slowly;
b) It is often used intravenously;
c) The drug of choice for the treatment of diabetic coma;
d) Operate for a long time;
e) May be given orally.

9. Correct statement about basis-bolus regimen of insulin therapy:

a) The mode of insulin administration in diabetes does not matter, only the daily dose is important;

b) A basis-bolus injection regimen involves taking a number of injections through the day;

c) Prolonged insulin is given once a day, it mimics the basal secretion of insulin;

d) Short-acting insulin is given after meals, it mimics the secretion of insulin associated with the release of glucose.

10. Side effects of insulin preparations are:

a) Loss of appetite;
b) Hypoglycemia;
c) Allergic reactions;
d) Dyspeptic disturbances;
e) Arterial hypertension.

11. Typical side reaction of short acting insulin:

a) Weight gain;
b) Hypoglycemia;
c) Increased sweating;
d) Dyspeptic disturbances;
e) Arterial hypertension.

12. Treatment of insulin overdosing:

a) Metformin orally;
b) An overdose of insulin is not dangerous, nothing should be done;
c) Injection of glucose solution.

13. Drug that is used in patients with diabetes insipidus:

a) Terlipressin; c) Desmopressin; e) Furosemide.
b) Oxytocin; d) Urofollitropin;

14. Physiological insulin antagonists:

a) Glucagon; c) Acarbose; e) Rosiglitasone.
b) Epinephrin; d) Glucocorticoids;

15. Which drug acts on insulin secretion?

a) Glybenclamide; c) Metformin; e) Pioglitazone;
b) Acarbose; d) Glucagon; f) Insulin preparations.

16. The mechanism of action of sulfonylurea derivatives:

a) Suppression of gluconeogenesis in the liver;
b) Blockade of potassium channels of membranes of pancreatic β-cells;
c) Increased sensitivity of cells to insulin;
d) Increased insulin release by β-cells of the pancreas;
e) Increased sensitivity of β-cells to glucose.

17. Mechanism of action of biguanides:

a) Inhibition of gluconeogenesis in the liver;
b) Induction of insulin secretion by β-cells of the pancreas;
c) Increased glucose utilization by muscles and fat tissue;
d) Reduction of glucose absorption in the intestine;
e) Induction of glycogenolysis.

18. Mechanism of action of PPARs modulators:

a) Increased insulin release by β-cells of the pancreas;
b) Suppression of gluconeogenesis in the liver;
c) Regulation transcription of genes involved in glucose utilization;
d) Reduction of glucose absorption in the intestine;
e) Inactivation of cellular inhibitor of the GLUT2 glucose transporter.

19. Acarbose is characterized by:

a) Inhibits α-glucosidase;
b) Prevents absorption of carbohydrates in the intestine;
c) Causes severe hypoglycaemia;
d) Often causes flatulence and diarrhea;
e) Stimulates secretion of insulin.

20. Antidiabetic drug that reduces weight:

a) Glybenclamide; c) Metformin; e) Pioglitazone;
b) Acarbose; d) Glucagon; f) Insulin preparations.

21. Antidiabetic drugs that may cause weight gain:

a) Glybenclamide; b) Metformin; c) Insulin preparations.

FEMALE SEX HORMONES, THEIR ANALOGUES AND ANTAGONISTS. MALE SEX HORMONES AND THEIR DERIVATIVES

1. **Put the action of steroid hormones in the right order:**
   a) Activation of translation;
   b) Binding with specific receptors;
   c) Transport in the nucleus;
   d) Transport in the cell;
   e) Correlation with the genome;
   f) Induction of the transcription.

2. **Gestagen drugs:**
   a) Induce ovulation;
   b) Inhibit contractive activity of myometrium;
   c) Are used for maintenance of pregnancy;
   d) Stimulate the development of secondary sex characteristics;
   e) Are applied in contraceptive pills.

3. **Estrogen drugs:**
   a) Stimulate the development of secondary sex characteristics;
   b) Cause hyperplasia of endometrium;
   c) Are applied in case of deficiency of ovarian function;
   d) Are in composition of combined contraceptive pills;
   e) Cause osteoporosis.

4. **Administration of progestagen is indicated in all cases except:**
   a) The treatment of early termination of pregnancy;
   b) The treatment of termination of pregnancy in later periods;
   c) Varicose veins of lower extremities;
   d) Amenorrhea;
   e) Dysmenorrhea.

5. **Administration of estrogen preparations is indicated in all cases except:**
   a) State after ovariectomy;
   b) Fibro-cystic mastopathy;
   c) Hypogonadism;
   d) Hormonal contraception;
   e) Dysmenorrhea.

6. **Substitution therapy with female sex hormones after removal of the ovaries is carried out by:**
   a) Short courses; b) Long courses; c) During life.

7. **Drug that inhibits the release of gonadotropic hormones:**
   a) Bromocriptine;
   b) Danazol;
   c) Lyotropin alfa;
   d) Pigvisomant;
   e) Oxytocin.

8. **Prime target of contraceptives:**
   a) Hypophiseal secretion of gonadotropic hormones;
   b) Follicular maturation;
   c) Ovulation;
   d) Implantation of fertilized egg.

9. Effects of contraceptives:

a) Inhibition of follicular maturation;
b) Spermatocidal effect;
c) Impairment of implantation of a fertilized egg;
d) Destruction of sperm motions;
e) Inhibition of ovulation.

10. Effects of post-coital contraceptives:

a) Desquamation of endometrium;
b) Inhibition of follicular maturation;
c) Spermatocidal effect;
d) Destruction of sperm motions;
e) Inhibition of ovulation.

11. Correct statement about mifepristone:

a) Antagonist of progesterone;
b) Provoke placenta desquamation during any period of pregnancy;
c) Used for contraceptive purposes;
d) Used to interrupt pregnancy only for medical reasons.

12. Set up corresponds between groups:

a) Anabolic steroids;
b) Androgenes;
c) Estrogenes;
d) Glucocorticoids;
e) Mineralocorticoids.

and hormone drugs (each element in the right column can be used only once):

1) Testosterone;
2) Diethylstibestrol;
3) Nandrolone
4) Desoxycortone;
5) Mometasone.

13. Indications for the use of anabolic hormones:

a) Cachexia;
b) Acceleration of osteogenesis in fractures;
c) Long-term therapy with glucocorticosteroids;
d) Hormone-dependent tumors of the prostate;
e) Osteoporosis.

14. Properties of anabolic steroids:

a) Inhibit protein synthesis;
b) Can be applied in case of cachexia;
c) Decrease muscle mass;
d) Are administered in case of osteoporosis;
e) Can cause masculinization in women.

15. Androgen drugs:

a) Stimulate the development of secondary sex characteristics;
b) In the adult male suppress the secretion of gonadotropins and result in atrophy of the interstitial tissue and the tubules of the testes;
c) Decrease muscle mass;
d) Have an anabolic effect;
e) Can cause masculinization in women.

ADRENOCORTICAL HORMONE DRUGS

1. Tetracosactide is effective stimulator of secretion of:

a) Glucocorticoids; c) Thyroxine; e) Insulin.
b) Androgenic steroids; d) Norepinephrine;

2. Put action of steroid hormones in the right order:

a) Correlation with the genome;
b) Regulation of the transcription;
c) Activation of translation;
d) Transport in the cell;
e) Binding to specific receptors in the cytoplasm of the cell;
f) Transport the ligand-bound receptor complex in the nucleus.

3. Adverse effects of glucocorticoids are:

a) Behavioral changes, anxiety;
b) Sleeplessness, acute psychosis;
c) Weakness, apathy;
d) Decrease in the convulsive threshold;
e) Vestibular-cochlear disorders.

4. Adverse effects of continued use of glucocorticoids are:

a) Sodium and fluid retention;
b) Arterial hypertension;
c) Hyperglycemia;
d) Hypoglycemia;
e) Atrophy of adrenal cortex;
f) Bacterial and mycotic infections;
g) Fat redistribution and abnormal deposition.

5. Define the correct assertions about prednisolone:

a) Supresses the synthesis of endogenous glucocorticoids;
b) Has severe hypotension activity;
c) More than half of dosage is applied in the morning if prednisolone is used as anti-inflammatory and anti-allergic drug;
d) Applied dosage is uniformly distributed if prednisolone is used as anti-inflammatory and anti-allergic drug;
e) Has immunostimulatory activity.

6. Mineralocorticoids have the following properties:

a) Increase the reabsorption of sodium ions and water in the renal tubules;
b) Increase elimination of potassium ions;
c) Increase diuresis;
d) Can cause arterial hypertension;
e) Can be applied in patients with Addison disease.

7. Glucocorticoids can be used as … drugs:

a) Anti-allergic;
b) Hyperglycemic;
c) Anti-inflammatory;
d) Catabolic;
e) Immunosuppressive.

8. The main clinical application of glucocorticoids:

a) Addison's disease;
b) Diabetes;
c) Allergy;
d) Organ transplant rejection;
e) Inflammatory skin lesions:
f) Autoimmune diseases.

9. Select metabolic effects of glucocorticoids:

a) Negative nitrogen balance;
b) Hypoglycemia;
c) Hyperlipidemia;
d) Raised appetite;
e) Obesity.

10. The following drug has intensed mineralocorticoid activity (sodium and water retention and intensification of potassium elimination):

a) Dexamethasone;
b) Hydrocortisone;
c) Momethasone;
d) Prednisolone;
e) Methylprednisolone.

ANTI-INFLAMMATORY DRUGS. ANTI-GOUT DRUGS

1. The main mechanism of anti-inflammatory action of NSAIDs:

a) Stabilization of mast cell membranes, inhibition of the release of mediators of allergy and inflammation;
b) Suppression of prostaglandin synthesis by inhibition of cyclooxygenase;
c) Suppression of prostaglandin synthesis by inhibition of phospholipase A2;
d) Suppression of lipoxygenase activity with reduced production of leukotrienes;
e) Destruction of mediators of inflammation.

2. The main side effects of nonselective cyclooxygenase inhibitors are:

a) Ulceration of the gastrointestinal tract;
b) Immunosuppression;
c) Inhibition of kidney function (nephrotoxic effect);
d) Cardiotoxic action;
e) Impairment of protein, fat and carbohydrate metabolism.

3. The main pharmacodynamic effects of non-steroidal anti-inflammatory drugs are:

a) Antipyretic;
b) Anabolic;
c) Anti-inflammatory;
d) Analgesic;
e) Immunosuppressive;
f) Immunostimulatory.

4. Select NSAIDs with low selectivity for COX-2:

a) Indomethacin;
b) Celecoxib;
c) Acetylsalicylic acid (analgesic and antipyretic doses);
d) Naproxen;
e) Valdecoxib;
f) Diclofenac.

5. Features of celecoxib:

a) It equally inhibits COX-1 and COX-2;
b) Has weak ulcerogenic effect;
c) There is a risk of thromboembolic cardiovascular complications;
d) Is less potent than acetylsalicylic acid for anti-inflammatory efficacy;
e) Abnormal liver function requires correction dosing regimen.

6. Features that are typical for non-steroidal anti-inflammatory drugs:

a) Poor tolerability;
b) Suppression of inflammation of any nature;
c) Combination of anti-inflammatory, analgesic and antipyretic action;
d) Reduction of the production of endogenous glucocorticosteroids;
e) Inhibition of cyclooxygenase activity.

7. Features of salicylates:

a) Have a gastrotoxic effect;
b) Cause hyperglycemia;
c) In low doses, platelet aggregation is inhibited;
d) May cause bronchospasm;
e) Suppress migration of phagocytes to the focus of inflammation, inhibit phagocytosis.

8. Steroidal anti-inflammatory drugs:

a) Suppress production of endogenous glucocorticosteroids;
b) Have an immunosuppressive effect;
c) Have only anti-inflammatory, analgesic and antipyretic effects;
d) Cause ulceration of gastrointestinal tract;
e) Block synthesis of inflammatory mediators.

9. Specify effects of steroidal anti-inflammatory drugs:

a) Anti-inflammatory;
b) Immunostimulatory;
c) Immunosuppressive;
d) Anti-allergic;
e) M-cholinoblocking.

10. Mechanism of anti-inflammatory effect of glucocorticosteroids:

a) Decrease in the synthesis of prostaglandins and leukotrienes due to inhibition of the activity of phospholipase A2;

b) Selective suppression of prostaglandin synthesis, due to inhibition of cyclooxygenase activity;

c) Inhibition of COX-2 production;

d) Suppression of cellular mechanisms of inflammation (impairment of migration of macrophages and neutrophils in the focus of inflammation);

e) Immunosuppressive action — disturbance of proliferation and differentiation of immunocompetent cells, antibodies, cytokines, inflammatory mediators.

11. Beclomethasone:

a) Glucocorticosteroid for topical application;

b) Glucocorticosteroid for systemic use;

c) Inhibition of the synthesis of endogenous glucocorticosteroids is significant;

d) Is used in aerosol dosage forms;

e) Is used for the treatment of bronchial asthma and vasomotor rhinitis.

12. Features of prescribing glucocorticosteroids as anti-inflammatory and antiallergic agents:

a) Most of the daily dose is prescribed in the morning hours;

b) Most of the daily dose is prescribed in the evening hours;

c) The daily dose is evenly distributed;

d) Are cancelled gradually, slowly lowering the dose;

e) Are cancelled at a time.

13. Irreversible consequences of GCS application:

a) Reduced resistance to infections;

b) Deceleration of tissue regeneration;

c) Subcapsular cataract;

d) Teratogenic effect;

e) Steroid diabetes.

14. Mechanism of anti-gout action of allopurinol:

a) Inhibition of reabsorption of uric acid in renal tubules;

b) Disruption of biosynthesis of uric acid from hypoxanthine;

c) Suppression of phagocytosis and ejection of inflammatory mediators;

d) Acceleration of biotransformation of uric acid;

e) Covalent binding and excretion of uric acid.

15. Mechanism of anti-gout action of sulfinpyrazone:

a) Inhibition of xanthine oxidase;

b) Enhancement of uric acid secretion in renal tubules;

c) Decrease in reabsorption of uric acid in renal tubules;

d) Acceleration of biotransformation of uric acid;

e) Covalent binding and excretion of uric acid.

ANTI-ALLERGIC DRUGS

1. Effects of antihistamines of the 1st generation:

a) Antiemetic effect;
b) Sedative effect;
c) Potentiate the action of drugs for general anesthesia, opioid analgesics and anesthetics;
d) Stimulation of peristalsis;
e) Constriction of small arterioles.

2. Distinctive features of antihistamines of the 2nd generation in comparison with the 1st generation:

a) High selectivity to H_1-histamine receptors;
b) Long duration of action;
c) Less pronounced sedative effect;
d) Are less likely to develop tolerance;
e) Minor efficiency;
f) Reduce glucose tolerance.

3. Side effects of antihistamines of the 1st generation associated with their M-cholinoblocking action:

a) Dry mouth;
b) Urine retention;
c) Constipation;
d) Bradycardia;
e) Paralysis of accommodation;
f) Activation of catabolism.

4. Most probable side-effects after parenteral administration of antihistamines:

a) Hypotension;
b) Tachycardia;
c) Hypertension;
d) Bradycardia;
e) Tachycardia with hypertension;
f) Tachycardia with hypotension.

5. The most suitable medicines for the treatment of mild allergic reactions of immediate type (pruritus, urticaria):

a) Epinephrine;
b) Cromoglycic acid;
c) Diphenhydramine;
d) Clemastine;
e) Prednisolone;
f) Loratadine.

6. Set correspondence between groups:

a) Histamine receptor antagonist;
b) Inhibitor of the action of mediators of allergy;
c) Interleukins;
d) Stabilizers of mast cell membranes;
e) Leukotriene receptor antagonists;

and drugs

1) Diphenhydramine;
2) Zafirlukast;
3) Betaleikin;
4) Nedocromil;
5) Fenspiride.

7. Specify antihistamines without M-cholinoblocking action:

a) Difenhydramine; c) Promethazine; e) Desloratadine.
b) Loratadine; d) Fexofenadine;

8. Specify antihistamines which can be taken once a day:

a) Clemastine; c) Hifenadine; e) Cetirizine.
b) Loratidine; d) Diphenhydramine;

9. Restore the mechanism of development of a delayed-type allergic reaction:

a) Production of interleukin-1 by macrophages;
b) Antigen killing, topical repair (or progression of immune inflammation);
c) Induction of transformation of T-lymphocytes into effector cells;
d) Antigen receipt, its recognition and capture by macrophages;
e) Interaction of effector cells with other immune cells;
f) Assignment of mediators of allergy and inflammation, attraction of immunocompetent cells to the outbreak;
g) Activation of T-helpers;
h) Production of interleukin-2 by T-helpers.

10. Restore the mechanism of development of an allergic reaction of an immediate type:

a) Primary recognition of antigen by immunocompetent cells;
b) Interaction of antigen with mast cells having specific sites of its binding;
c) Clinical manifestations of an allergic reaction of immediate type;
d) Degranulation of the mast cell with the release of mediators of allergy and inflammation;
e) Production of antibodies (IgE) and its presentation on the surface of mast cells;
f) Second contact with antigen.

11. Drugs for the treatment of delayed-type allergic reactions:

a) Preparations of gold;
b) Glucocorticoids;
c) Leukotriene receptor antagonists;
d) Inhibitors of proliferation;
e) Stabilizers of mast cell membranes;
f) Penicillamine;
g) Antihistamines.

12. Restore the molecular mechanism of action of methotrexate

a) Antagonism with folic acid;
b) Inhibition of differentiation and proliferation of immunocompetent cells;
c) Improvement of clinical symptoms;
d) Immunosuppression, inhibition of remodeling of connective tissue;
e) Inhibition of the synthesis of nucleic acids and proteins.

13. Restore the first aid sequence to assist in anaphylactic shock:

a) Administration of glucocorticosteroids, preferably intravenously;

b) Discontinuation of the ingestion of an allergen (epinephrine topically);

c) Symptomatic therapy (bronchodilators, pacemakers, antihistamines, respiratory analeptics, etc.);

d) Maintenance of systemic arterial pressure and the heart activity (epinephrine systemically).

14. The mechanism of anti-allergic effect of glucocorticoids:

a) Reduction of immunocompetent cells;

b) Bockade of histamine receptors;

c) Stabilization of mast cell membranes;

d) Decrease in the synthesis of immunoglobulins;

e) Suppression of migration of immunocompetent cells.

15. Zafirlukast:

a) Reduces vascular permeability;

b) Suppresses bronchial secretion and reduces viscosity of sputum;

c) It is used for the relief of bronchospasm;

d) Reduces the swelling of the bronchial mucosa;

e) Is a leukotriene receptor antagonist;

f) It is an antihistamine drug of the 1st generation.

GENERAL CONCEPTS OF CHEMOTHERAPY

1. Antimicrobial combination therapy is used:

a) For the prevention of resistant bacterial strains development;

b) To enhance antimicrobial effect;

c) To broaden antibacterial spectrum of activity;

d) To enhance antimicrobial effect of a bacteriostatic antibiotic it is necessary to add bactericidal one;

e) To decrease the toxicity of certain antibiotics.

2. The most common causative agents of superinfections:

a) Clostridium difficile;

b) Candida fungi;

c) Mycobacterium tuberculosis;

d) Chlamydia;

e) Pseudomonas aeruginosa.

3. The causes of antibiotic therapy inefficiency:

a) Resistance of a pathogen to antibiotics;

b) Concurrent administration of vitamins;

c) Viral infections;

d) Dosage regime violation;

e) Incorrect antibiotic combinations.

4. Basic principles of chemotherapy:

a) Early start of chemotherapy;
b) Pathogen identification;
c) In life-threatening conditions, broad-spectrum antibiotics may be used before pathogen identification has been completed;
d) Full-course of chemotherapy unless pathogen eradication is achieved;
e) Chemotherapy should be carried out until symptoms have resolved;
f) The most effective and safest antimicrobial drugs must be used;
g) To increase efficacy of the treatment or minimize the development of antibiotic resistant microbes, combined chemotherapy should be used.

5. In accordance with the result of action, chemotherapeutic drugs can be separated into the following groups:

a) Static (reversibly acting);
b) Protein synthesis inhibitors;
c) Cell wall disruptors;
d) Cell wall synthesis inhibitors;
e) Cidal only against microorganisms that multiply (irreversibly acting);
f) Cidal even against resting forms (irreversibly acting).

6. Which combination of chemotherapeutic agents is undesirable:

a) Static (reversibly acting) with cidal only against microorganisms that multiply (irreversibly acting);
b) Static (reversibly acting) with cidal even against resting forms (irreversibly acting);
c) Cidal only against microorganisms that multiply (irreversibly acting) with cidal even against resting forms (irreversibly acting).

7. In accordance with the mechanism of action, chemotherapeutic drugs can be separated into:

a) Penicillins;
b) β-lactam antibiotics;
c) Tetracyclines;
d) Bacterial cellular wall synthesis inhibitors;
e) Inhibitors of microbial protein synthesis;
f) Membrane active agents;
g) Inhibitors of RNA synthesis.

8. In accordance with chemical nature (chemical structure), chemotherapeutic drugs can be separated into:

a) Static (reversibly acting);
b) Cidal (irreversibly acting);
c) Inhibitors of microbial protein synthesis;
d) β-lactam antibiotics;
e) Penicillins;

f) Cephalosporins;
g) Carbapenems;
h) Tetracyclines;
i) Macrolides;
j) Amphenicols;
k) Lincosamides;
l) Ansamycines;
m) Aminoglycosides.

9. Post Antibiotic Effect is:

a) Continued suppression of bacterial growth after exposure of the bacteria to an antimicrobial agent and removal of this agent from the environment;
b) Useful feature of chemotherapeutic agents;
c) All adverse reactions and toxic effects after chemotherapy;
d) Prolonged action of chemotherapeutic agents;
e) Providing the conditions for relatively rare use of short-acting antibiotics (for example, amoxicillin — $t_{1/2}$ = 77 min, recommended to use every 8 hours).

10. Probiotics are:

a) Bacteritic preparations intended for correction of biocenosis of the mucous membranes;
b) Antibiotics enhancers;
c) Class of broad-spectrum antibiotics;
d) Usually prescribed after broad-spectrum antibiotics;
e) Class of anti-viral agents.

11. Prebiotics are:

a) Food ingredients that induce the growth or activity of beneficial microorganisms (bacteria and fungi);
b) Precursors of antibiotics;
c) Reduce the risk of resistance obtaining.

12. What side effects are associated with chemotherapeutic action?

a) Endotoxin shock (Jarisch–Herxheimer reaction);
b) Diarrhea;
c) Candidiasis;
d) Nephrotoxicity;
e) Hepatotoxicity.

13. What side effects are associated with direct target organ toxicity of chemotherapeutic agents?

a) Endotoxin shock (Jarisch–Herxheimer reaction);
b) Nephrotoxicity;
c) Hepatotoxicity;
d) Leukopenia;
e) Neuritis.

14. Correct statements about pseudomembranous colitis:

a) Caused by Clostridium difficile;
b) Typical form of antibiotic-associated diarrhea;
c) Proper antimicrobial prescribing is the most effective method for preventing;
d) Non-serious side effect requiring no special attention.

15. Possible mechanisms of obtained resistance:

a) Expression of enzymes that inactivate antibiotics;
b) Modification of the target of antibiotics;
c) Antibiotic efflux;
d) Reduced permeability;
e) Resistance to antibiotics never develops.

BACTERIAL CELLULAR WALL SYNTHESIS INHIBITORS

1. Beta-Lactam antibiotics interfere with:

a) Cell wall synthesis;
b) Plasma membrane permeability;
c) Protein synthesis on ribosomes;
d) RNA synthesis;
e) All listed variants.

2. Beta-lactam antibiotics are:

a) Semisynthetic penicillins;
b) Biosynthetic penicillins;
c) Azalide;
d) Cephalosporins;
e) Carbapenems;
f) Monobactams.

3. Benzylpenicillin preparations:

a) Bactericidal;
b) Bacteriostatic;
c) Penicillinase-resistant;
d) Inactivated by penicillinases;
e) Stable in the hydrochloride acid (acid-resistant);
f) Inactivated by the hydrochloride acid.

4. Benzylpenicillin preparations typically cause:

a) Agranulocytosis;
b) Anemia;
c) Allergic reactions;
d) Hearing loss and vestibular disturbances;
e) Nephrotoxicity;
f) Dysbacteriosis.

5. Penicillins show little activity or ineffective against:

a) Treponema pallidum;
b) Actively growing bacterial cells;
c) Meningococci;
d) Resting bacterial cells.

6. Semisynthetic penicillinase-resistant penicillins with predominant activity against gram-positive bacteria:

a) Oxacillin; c) Flucloxacillin; e) Dicloxacillin;
b) Ticarcillin; d) Amoxicillin; f) Carbenicillin.

7. Oxacillin:

a) Has a broad-spectrum of activity;
b) Has benzylpenicillin-like spectrum of activity;
c) Is penicillinase-resistant;
d) Is inactivated by penicillinases;
e) Is inactivated by the hydrochloride acid;
f) Is stable in the acid.

8. Amoxicillin:

a) Has benzylpenicillin-like spectrum of activity;
b) Has a broad-spectrum of activity;
c) Is penicillinase-resistant;
d) Is inactivated by penicillinases;
e) Is stable in the hydrochloride acid;
f) Is inactivated by the hydrochloride acid.

9. First-line antibiotic for the treatment of infections caused by Pseudomonas aeruginosa:

a) Benzylpenicillin; c) Chloramphenicol; e) Tetracycline.
b) Piperacillin; d) Erythromycin;

10. First-line antibiotic for the treatment of meningococcal meningitis:

a) Amphotericin B; c) Chloramphenicol; e) Nystatin.
b) Benzylpenicillin sodium salt; d) Streptomycin;

11. Most appropriate antibiotic for treating infections in pregnancy:

a) Streptomycin; c) Benzylpenicillin; e) Chloramphenicol.
b) Tetracycline; d) Gentamicin;

12. Identify the correct statements about cephalosporins:

a) Cephalosporins are bactericidal towards multiplying bacteria;
b) Both cephalosporins and penicillins have the same spectrum of activity;
c) There is cross-sensitivity between penicillins and cephalosporins;
d) Cephalosporins are resistant to staphylococcal beta-lactamases (1st and 2nd generation), gram-negative bacteria (3rd and 4th generation).

13. Most active drugs against Pseudomonas spp.:

a) First-generation cephalosporins;
b) Second-generation cephalosporins;
c) Third-generation cephalosporins;
d) Fourth-generation cephalosporins.

14. The greatest ability to penetrate into the cerebrospinal fluid is a distinctive feature of:

a) First-generation cephalosporins;
b) Second-generation cephalosporins;
c) Third-generation cephalosporins;
d) Fourth-generation cephalosporins.

15. Features of aztreonam:

a) Has a narrow spectrum of activity;
b) Is inactivated by beta-lactamases;
c) Resistant to beta-lactamases;
d) Inhibits RNA synthesis on ribosomes;
e) Inhibits microbial cell wall synthesis;
f) Is administered orally;
g) Is administered parenterally.

16. Features of imipenem:

a) Has a narrow spectrum of activity;
b) Has a broad spectrum of activity;
c) Is bacteriostatic;
d) Is bactericidal;
e) Inhibits RNA synthesis on ribosomes;
f) Inhibits microbial cell wall synthesis;
g) Is inactivated by beta-lactamases;
h) Is resistant to beta-lactamases;
i) Is administered orally;
j) Is administered parenterally.

17. Set up a correspondence between the pharmacological group:

a) Penicillins;
b) Cephalosporins (1st generation);
c) Cephalosporins (2nd generation);
d) Cephalosporins (3rd generation);
e) Cephalosporins (4th generation);
f) Carbapenems;

and drug:

1. Carbenicillin;	3. Cefepime;	5. Cefazolin;
2. Meropenem;	4. Cefoxitin;	6. Ceftriaxone.

18. Glycopeptides are:

a) Vancomycin;	d) Amikacin;	g) Teicoplanin.
b) Cefotaxime;	e) Imipenem;	
c) Aztreonam;	f) Gentamicin;	

19. Features of vancomycin:

a) Has a broad spectrum of activity;
b) Affects predominantly gram-positive bacteria;

c) Is bactericidal;
d) Is bacteriostatic;
e) Inhibits bacterial cell wall synthesis;
f) Inhibits RNA synthesis on ribosomes;
g) Well absorbed from GIT;
h) Poor GIT absorption.

20. Vancomycin may cause:

a) Kidney injury; c) BP increase; e) Thrombophlebitis;
b) BP decrease; d) Seizures; f) Deafness.

INHIBITORS OF MICROBIAL PROTEIN SYNTESIS

1. Drugs that inhibit protein synthesis on ribosomes:

a) Aminoglycosides; e) Macrolides; i) Penicillins;
b) Ansamycins; f) Amphenicols; j) Lincosamides.
c) Cephalosporins; g) Tetracyclines;
d) Glycopeptides; h) Oxazolidinones;

2. Features of tetracyclines:

a) Have a broad spectrum of activity;
b) Affect predominantly gram-negative bacteria;
c) Are bactericidal;
d) Are bacteriostatic;
e) Slow resistance development;
f) Fast resistance development;
g) Inhibit protein synthesis on ribosomes;
h) Inhibit cell wall synthesis.

3. Tetracyclines are the drugs of choice for:

a) Coccal infections; d) Tularemia; g) Syphilis;
b) Bacillary dysentery; e) Rickettsial infections; h) Cholera;
c) Brucellosis; f) Typhoid fever; i) Plague.

4. Tetracyclines may cause:

a) Anemia; e) Liver injury;
b) Dyspepsia; f) Allergic reactions;
c) Hearing loss; g) Visual disturbances.
d) Dysbacteriosis;

5. Why are tetracyclines contraindicated in pregnancy and in children?

a) They can be deposited in the fetal teeth, leading to enamel dysplasia;

b) They are deposited in bone, where it may cause deformity or growth inhibition;

c) Tetracyclines can be given to children and pregnant women without any restrictions.

6. Features of chloramphenicol:

a) Has a broad spectrum of activity;
b) Affects predominantly gram-positive bacteria;
c) Is bactericidal;
d) Is bacteriostatic;
e) Slow resistance development;
f) Fast resistance development.

7. Chloramphenicol is the drug of choice for:

a) Typhoid fever and other salmonellosises;
b) Coccal infections;
c) Spotted fever and other rickettsial infections;
d) Cholera;
e) Bacillary dysentery;
f) Amebial dysentery.

8. Chloramphenicol may cause:

a) Agranulocytosis; c) Collapse; e) Dysbacteriosis;
b) Anemia; d) Hearing loss; f) Allergic reactions.

9. Features of streptomycin:

a) Have a broad spectrum of activity;
b) Affects predominantly gram-positive bacteria;
c) Is bactericidal;
d) Is bacteriostatic;
e) Interferes with mRNA attachment and causes misreading of the genetic code;
f) Interferes with plasma membrane permeability;
g) Well absorbed from GIT;
h) Poorly absorbed from GIT.

10. Streptomycin is the drug of choice for:

a) Tuberculosis; e) Bacillary dysentery;
b) Typhoid fever; f) Syphilis;
c) Plague; g) Gonorrhea.
d) Tularemia;

11. Streptomycin may cause:

a) Allergic reactions; d) Hearing loss; g) Kidney injury.
b) Anemia; e) Vestibular disturbances;
c) Liver injury; f) Dysbacteriosis;

12. Neomycin is used for:

a) Wound infections, phlegmon, abscesses caused by Staphylococci, Streptococci and Pseudomonas aeruginosa;
b) Rickettsial infections;

c) Tuberculosis;
d) Candidiasis;
e) Bowel preparation before surgery.

13. Third generation aminoglycosides are:

a) Streptomycin; d) Kanamycin; g) Amikacin.
b) Tobramycin; e) Gentamicin;
c) Neomycin; f) Netilmycin;

14. Intracavitary administration of aminoglycosides is dangerous because of:

a) Neuromuscular blockade development leading to respiratory arrest;
b) Obstipation development;
c) Abnormal heart rhythm (ventricular extrasystole);
d) Psychosis development.

15. Features of lincosamides:

a) Have a broad spectrum of activity;
b) Affect predominantly gram-positive bacteria;
c) Inhibit cell wall synthesis;
d) Inhibit protein synthesis on ribosomes;
e) Acquired resistance develops rapidly;
f) Drugs of choice for the treatment of osteomielitis.

16. Lincosamides may cause:

a) Dyspepsia; f) Collapse;
b) Allergic reactions; g) Thrombocytopenia.
c) Pseudomembranous colitis;
d) Liver injury;
e) Respiratory arrest (on fast i/v administration);

17. Aminoglycosides used for the treatment of infections caused by gentamicin-resistant bacteria:

a) Streptomycin; c) Neomycin; e) Kanamycin.
b) Amikacin; d) Tobramycin;

18. High synovial fluid concentrations are produced by:

a) Clindamycin; c) Nystatin; e) Cefuroxime;
b) Erythromycin; d) Lincomycin; f) Phenoxymethylpenicillin.

19. Features of macrolides:

a) Have relatively broad spectrum of activity;
b) Affect predominantly gram-positive bacteria;
c) Inhibit cell wall synthesis;
d) Inhibit protein synthesis on ribosomes;
e) Low toxic, usually well tolerated;
f) Possible development of acquired resistance;
g) Can be used in neonates and children.

20. First-line antibiotic for the treatment of mycoplasmosis and chlamydial infections is:

a) Erythromycin; c) Gentamicin; e) Vancomycin.
b) Cefuroxime; d) Carbenicillin;

INHIBITORS OF RNA SYNTESIS AND MEMBRANE-ACTIVE AGENTS

1. Polypeptide antibiotic:

a) Polymyxin B; c) Imipenem; e) Clindamycin.
b) Azithromycin; d) Aztreonam;

2. Polymyxin B interferes with:

a) Cell wall synthesis;
b) Protein synthesis on ribosomes;
c) RNA synthesis;
d) Plasma membrane permeability;
e) All listed variants.

3. Features of polymyxins:

a) Have a broad spectrum of activity;
b) Affect predominantly gram-negative bacteria;
c) Are bactericidal;
d) Are bacteriostatic;
e) Interfere with plasma membrane structure and function;
f) High efficacy against intracellular pathogens;
g) Active against Pseudomonas aeruginosa.

4. Polymyxin B:

a) Is extremely toxic in systemic application;
b) Can bind to and inactivate microbial endotoxins;
c) Penetrates through the cell wall and makes a hole in it;
d) Bacteriostatic antibiotic;
e) Oral bioavailability is 0;
f) Bactericidal against all Gram-negative bacilli except the Proteus and Neisseria.

5. Polymyxin B is used for:

a) Syphilis;
b) Pseudomonas aeruginosa caused infections;
c) Tuberculosis;
d) Bowel preparation before surgery;
e) Rickettsial infections;
f) Candidiasis.

6. Inhibit RNA synthesis:

a) Chloramphenicol; c) Lincomycin; e) Griseofulvin;
b) Rifampicin; d) Clindamycin; f) Rifabutin.

7. Show predominantly bactericidal activity:

a) Ansamycins; c) Polypeptides; e) Oxazolidinones.
b) Amphenicols; d) Lincosamides;

8. Characteristic features of rifampicin:

a) Has a broad spectrum of activity;
b) Affects predominantly gram-positive bacteria;
c) Is bactericidal;
d) Is bacteriostatic;
e) Inhibits RNA synthesis;
f) High efficacy against intracellular pathogens;
g) Active against Mycobacterium tuberculosis.

9. Rifampicin:

a) Has a dose-dependent hepatotoxicity;
b) Has high bioavailability and regular distribution in body compartments;
c) Well accumulates in cells and can attack even intracellular microbes;
d) Bacteriostatic antibiotic;
e) Oral bioavailability is 0;
f) Powerful inducer of the hepatic cytochrome P450 enzyme system;
g) Has a broad spectrum of action but used to treat few types of bacterial infections, including tuberculosis, leprosy and Legionnaires disease.

10. Common side effects of rifampicin:

a) Hepatotoxicity;
b) Reversibly stains urine, sweat, tears and other bodily fluids in an orange-red color;
c) Flu-like symptoms;
d) Allergic reactions;
e) Nephrotoxicity;
f) Rifampicin has no side effects and is well tolerated.

SYNTHETIC ANTIMICROBIAL DRUGS

1. Mechanism of action of sulfonamides:

a) Drug molecules are reduced by anaerobic microbes to metabolites interfering with nucleic acid replication;
b) Inhibition of nucleic acid replication, complexation with microbial metalloenzymes;
c) Folic acid synthesis inhibition in bacterial cells;

d) Nitro-group of the drugs is reduced by anaerobic microbes and protozoic cells to metabolites causing DNA damage;

e) Bacterial topoisomerase II (DNA-gyrase) and IV inhibition.

2. Sulfonamides are

a) Bacteriostatic; b) Bactericidal; c) Fungicidal; d) Virucidal.

3. Trimethoprim is:

a) Bacteriostatic; b) Bactericidal; c) Fungicidal; d) Virucidal.

4. Co-trimoxazole is:

a) Bacteriostatic; b) Bactericidal; c) Fungicidal; d) Virucidal.

5. Sulfonamides may cause:

a) Bone marrow depression (anemia, leucopenia);
b) Hearing loss and visual disturbances;
c) Allergic reactions;
d) Cristaluria and nephrolithiasis;
e) Dyspepsia, hepatotoxicity.

6. Co-trimoxazole may cause:

a) Bone marrow depression (neutropenia, anemia, thrombocytopenia);
b) Nausea, vomiting, glossitis, stomatitis;
c) Thrombosis;
d) Allergic reactions (rash, Stevens-Johnson syndrome);
e) Tachyarrhythmia.

7. Phtalylsulfathiazole is used only for the treatment of intestinal infections (bacterial dysentery, enterocolitis) because:

a) It is superior to other sulfonamides in its activity against intestinal pathogens;
b) Is almost not absorbed in GIT;
c) Decreases intestinal peristalsis;
d) Restores intestinal microflora;
e) Is well absorbed in GIT, excreted with bile.

8. Co-trimoxazole:

a) Is bacteriostatic;
b) Is bactericidal;
c) Is inferior to other sulfonamides in its spectrum of activity;
d) Has a wider range of activity than sulfonamides;
e) As compared to sulfonamides bacterial resistance develops more slowly.

9. Antimicrobial spectrum of co-trimoxazole:

a) Has a broader spectrum of activity than sulfonamides;
b) Nocardia spp., Moraxella spp., Pneumocysts;
c) Toxoplasma spp., Haemophilus influenzae;

d) Pseudomonas aeruginosa;
e) Mycobacterium tuberculosis;
f) Mycoplasma spp., Rickettsia spp.

10. Antimicrobial spectrum of sulfonamides:
a) Extremely broad;
b) Relatively narrow;
c) Toxoplasma spp, Haemophilus influenzae;
d) Shigella spp., Staphylococcus spp. (most strains);
e) Treponema pallidum;
f) Most fluoroquinolone-resistant microbes.

11. Mechanism of action of 8-oxyquinoline derivatives:
a) Drug molecules are reduced by anaerobic microbes to metabolites interfering with nucleic acid replication;
b) Inhibition of nucleic acid replication, complexation with microbial metalloenzymes;
c) Folic acid synthesis inhibition in bacterial cells;
d) Nitro-group of the drugs is reduced by anaerobic microbes and protozoic cells to metabolites causing DNA damage;
e) Bacterial topoisomerase II (DNA-gyrase) and IV inhibition.

12. 8-Oxyquinoline derivatives are:
a) Nitroxoline; c) Metronidazole; e) Furazolidone.
b) Nalidixic acid; d) Chlorquinaldol;

13. Quinolones are:
a) Nalidixic acid; c) Oxolinic acid; e) Trimethoprim.
b) Lomefloxacin; d) Fusidic acid;

14. Fluoroquinolones are:
a) Norfloxacin; c) Metronidazole; e) Lomefloxacin.
b) Ciprofloxacin; d) Ofloxacin;

15. Mechanism of action of fluoroquinolones:
a) Drug molecules are reduced by anaerobic microbes to metabolites interfering with nucleic acid replication;
b) Inhibition of nucleic acid replication, complexation with microbial metalloenzymes;
c) Folic acid synthesis inhibition in bacterial cells;
d) Nitro-group of the drugs is reduced by anaerobic microbes and protozoic cells to metabolites causing DNA damage;
e) Bacterial topoisomerases II (DNA-gyrase) and IV inhibition.

16. Fluoroquinolones are:
a) Bacteriostatic; c) Fungicidal;
b) Bactericidal; d) Virucidal.

17. Fluoroquinolones may cause:

a) Anorexia, nausea, vomiting, alteration in taste;
b) Nephritis, nephrolithiasis;
c) Allergic reactions (rash, angioedema), photosensitization;
d) Headache, vertigo, sleep disorder;
e) Tendinitis, juvenile arthropathy.

18. Nitroxoline:

a) Has a broad spectrum of activity;
b) Affects only gram-negative bacteria;
c) Almost is not absorbed from GIT, that is why it is used for intestinal infections;
d) Well absorbed from GIT, eliminated by renal excretion as unchanged drug, used for treatment of urinary infections;
e) Is bacteriostatic.

19. Antimicrobial spectrum of fluoroquinolones:

a) Broad;
b) Narrow, only gram-negative bacteria are sensitive;
c) Narrow, only gram-positive bacteria are sensitive;
d) Treponema pallidum;
e) Chlamydia, mycoplasma;
f) Mycobacterium tuberculosis.

20. Ciprofloxacin:

a) Has a broad spectrum of activity;
b) Affects only gram-positive bacteria;
c) Is used for intestinal infections (typhoid fever, paratyphoid fever, dysentery);
d) Well absorbed from GIT, passes through BBB;
e) Contraindicated in pregnant and nursing women.

21. 5-Nitroimidazole derivatives are:

a) Norfloxacin;
b) Nalidixic acid;
c) Metronidazole;
d) Tinidazole;
e) Nitrofurantoin.

22. Mechanism of action of 5-nitroimidazole derivatives:

a) Drug molecules are reduced by anaerobic microbes to metabolites interfering with nucleic acid replication;
b) Inhibition of nucleic acid replication, complexation with microbial metalloenzymes;
c) Nitro-group of the drugs is reduced by anaerobic microbes and protozoic cells to metabolites causing DNA damage;
d) Bacterial topoisomerase II (DNA-gyrase) and IV inhibition.

23. 5-Nitroimidazole derivatives are:

a) Bacteriostatic; b) Bactericidal; c) Fungicidal; d) Virucidal.

24. 5-Nitroimidazole derivatives may cause:

a) Nausea, vomiting, stomatitis, metallic taste;
b) Hepatitis, liver cirrhosis;
c) Allergic reactions (rash, angioedema);
d) Urine discoloration (reddish-brown);
e) Disulfiram-like reactions when taken together with alcohol.

25. Antimicrobial spectrum of 5-nitroimidazole derivatives:

a) Affect only aerobic bacteria;
b) Anaerobic bacteria;
c) Ultra-broad;
d) Amoebae;
e) Trichomonas spp.;
f) Lamblia spp.

26. Nitrofurans are:

a) Nitrofurantoin;
b) Tinidazole;
c) Fusidic acid;
d) Ofloxacin;
e) Furazolidone.

27. Nitrofurans may cause:

a) Headache, nausea, vertigo;
b) Malignant hyperthermia;
c) Peripheral neuropathy;
d) Bone marrow depression (anemia, leucopenia);
e) Liver injury (hepatitis, cholestasis).

28. Antimicrobial spectrum of nitrofurans:

a) Anaerobic bacteria;
b) Broad;
c) Escherichia coli, Shigella spp., Salmonella spp., Vibrio cholera;
d) Pseudomonas aeruginosa, Proteus spp., Klebsiella spp.;
e) Trichomonas spp.;
f) Lamblia spp.

ANTIMYCOBACTERIAL DRUGS

1. First-line anti-tuberculosis drugs:

a) Isoniazid;
b) Streptomycin;
c) Rifampicin;
d) Ethambutol;
e) PASA.

2. Second-line anti-tuberculosis drugs:

a) PASA;
b) Ethionamide;
c) Rifampicin;
d) Isoniazid;
e) Cycloserine.

3. The most effective anti-tuberculosis drugs (WHO classification):

a) Pyrazinamide; c) Rifampicin; e) Isoniazid.
b) Kanamycin; d) Streptomycin;

4. Multi-drug resistant tuberculosis is resistant:

a) To isoniazid only;
b) To rifampicin only;
c) To ethionamide and rifampicin;
d) To isoniazid and rifampicin;
e) To streptomycin and isoniazid.

5. Antibiotics with anti-tuberculosis activity:

a) Tetracyclines; c) Streptomycin; e) Cycloserine.
b) Vancomycin; d) Rifampicin;

6. Modern anti-tuberculosis drugs effective against multidrug-resistant strains:

a) Bedaquiline; c) Rifampicin; e) Streptomycin.
b) Isoniazid; d) Delamanid;

7. It is polychemotherapy that is used in the treatment of tuberculosis. Why?

a) Polychemotherapy is needed for the prevention of secondary infection;
b) Polychemotherapy decreases the risk of acquiring resistance;
c) Polychemotherapy is not required, this is a misconception.

8. Identify the correct statements about isoniazid:

a) One of the most effective anti-tuberculosis drugs;
b) Has a broad antimicrobial spectrum;
c) Affects M. tuberculosis and M. leprae;
d) Blocks the synthesis of mycolic acids (components of the mycobacterial cell wall);
e) Causes peripheral neuropathy.

9. Identify the correct statements about rifampicin:

a) One of the most effective anti-tuberculosis drug;
b) Has a broad antimicrobial spectrum;
c) Inhibits DNA-dependent RNA-polymerase;
d) Resistance develops slowly;
e) Penetrates through blood-brain barrier.

10. Identify the correct statements about ethambutol:

a) Affects predominantly M. tuberculosis;
b) Has a broad antimicrobial spectrum;
c) Inhibits the synthesis of mycobacterial cell wall;
d) Causes retrobulbar neuritis;
e) First-line anti-tuberculosis drug.

11. Identify the correct statements about streptomycin:

a) Has a broad antimicrobial spectrum;
b) Affects only M. tuberculosis;
c) Inhibits protein synthesis on ribosomes;
d) Resistance develops rapidly;
e) For parenteral use.

12. Typical side reactions resulting from the combination therapy:

a) Amplification of hepatotoxicity from individual components;
b) Amplification of neurotoxicity from individual components;
c) Risks of adverse reactions in combination are usually less than when used separately.

13. How is it possible to reduce the neurotoxicity of anti-tuberculosis therapy?

a) Replace isoniazid, ethambutol and pyrazinamide with reserve non-neurotoxic drugs;
b) Patients should take vitamin B_6 in its pyridoxine form to minimize the risk of peripheral nerve damage;
c) Risks of adverse reactions in combination are usually less than when used separately.

14. How is it possible to reduce the hepatotoxicity of anti-tuberculosis therapy?

a) Replace rifampicin, isoniazid, ethambutol and pyrazinamide with reserve non-hepatotoxic drugs;
b) Patients should take hepatoprotectors to minimize the risk of liver damage;
c) Risks of adverse reactions in combination are usually less than when used separately.

15. Identify the correct statements about bedaquiline:

a) Modern agent to treat multi-drug-resistant tuberculosis;
b) Should be used along with at least three other medications for tuberculosis;
c) Effective for monotherapy of tuberculosis;
d) Has a broad antimicrobial spectrum;
e) Affects M. tuberculosis;
f) Blocks the ability of M. tuberculosis to make adenosine 5'-triphosphate (ATP);
g) Can prolong the QT interval.

16. Identify the correct statements about delamanid:

a) Modern agent to treat multi-drug-resistant tuberculosis;
b) Should be used along with at least three other medications for tuberculosis;

c) Effective for monotherapy of tuberculosis;
d) Has a broad antimicrobial spectrum;
e) Affects M. tuberculosis;
f) Blocks the synthesis of mycolic acids (components of the mycobacterial cell wall);
g) Can prolong the QT interval.

17. Features of M. tuberculosis as a target for chemotherapy:
a) Mycolic acids are the constituents of the mycobacterial cell wall;
b) Sensitive to environmental factors and disinfectants;
c) Resistance to chemotherapeutic agents develops slowly;
d) Intracellular localization;
e) Able to persist in the host organism due to L-forms.

ANTIFUNGAL DRUGS

1. Nystatin-sensitive microorganisms:
a) Causative agents of systemic mycoses (Histoplasma spp. etc.);
b) Causative agents of dermatomycoses;
c) Yeast-like fungi (Candida spp.);
d) Gram-positive bacteria;
e) Gram-negative bacteria.

2. Identify the correct statements about nystatin:
a) Is well absorbed from GIT;
b) Is not absorbed from GIT;
c) Highly toxic;
d) Has a low toxicity;
e) Is used for the treatment of systemic mycoses;
f) Is used for the treatment of superficial mycoses.

3. Amphotericin B resistant microorganisms :
a) Causative agents of systemic mycoses (Histoplasma spp. etc.);
b) Causative agents of dermatomycoses;
c) Yeast-like fungi (Candida spp.);
d) Mold fungi (Aspergillus spp.);
e) Trypanosomes.

4. Identify the correct statements about amphotericin B:
a) Antimycotic spectrum of activity is similar to that of nystatin;
b) Antimycotic spectrum of activity is wider than nystatin's;
c) Good GIT absorption;
d) Has a high toxicity;
e) Is used for the treatment of dermatomycoses;
f) Is used for the treatment of systemic mycoses.

5. **Ketoconazole-resistant microorganisms:**
   a) Causative agents of systemic mycoses (Histoplasma spp. etc.);
   b) Causative agents of dermatomycoses (Microsporum spp.);
   c) Viruses;
   d) Yeast-like fungi (Candida spp.);
   e) Mold fungi (Aspergilla spp.).

6. **Identify the correct statements about clotrimazole:**
   a) Antimycotic spectrum of activity is similar to that of nystatin;
   b) For topical use;
   c) For topical and systemic use;
   d) Is used for the treatment of dermatomycoses;
   e) Is used for the treatment of systemic mycoses;
   f) Good GIT absorption.

7. **Identify the correct statements about fluconazole:**
   a) Well absorbed from GIT;
   b) Not absorbed from GIT;
   c) Is used for the treatment of systemic mycoses;
   d) Has a low toxicity;
   e) Inhibits the fungal steroid synthesis pathway;
   f) The drug of choice in immunocompromised patients.

8. **Griseofulvin-sensitive microorganisms:**
   a) Causative agents of systemic mycoses (Histoplasma spp. etc.);
   b) Causative agents of dermatomycoses (Microsporum spp.);
   c) Yeast-like fungi (Candida spp.);
   d) Mold fungi (Aspergilla spp.);
   e) Protozoa (amebas, leischmanias).

9. **Identify the correct statements about griseofulvin:**
   a) Good GIT absorption;
   b) Fungistatic;
   c) Provides fast antifungal effect;
   d) High concentrations are achieved in the cells producing keratin;
   e) Is used for the treatment of systemic candidiasis;
   f) Is used for the treatment of dermatomycoses.

10. **A drug used for the prevention of candidiasis resulting from broad-spectrum antibiotics:**
   a) Amphotericin B;
   b) Griseofulvin;
   c) Nystatin;
   d) Metronidazole;
   e) Clotrimazole.

ANTIVIRAL DRUGS

1. **Have anti-influenza activity:**
   a) Rimantadine;
   b) Oseltamivir;
   c) Saquinavir;
   d) Interferons;
   e) Acyclovir.

2. **Broad-spectrum antiviral agents:**
   a) Interferons;
   b) Nucleoside analogs;
   c) Interferon inducers;
   d) Protease inhibitors;
   e) Neuraminidase inhibitors.

3. **Anti-HIV drugs:**
   a) Zidovudine;
   b) Stavudine;
   c) Rimantadine;
   d) Acyclovir;
   e) Saquinavir.

4. **Antiherpetic agents:**
   a) Acyclovir;
   b) Zidovudine;
   c) Idoxuridine;
   d) Butaminophen;
   e) Rimantadine.

5. **Used for the treatment of cytomegalovirus infection:**
   a) Ganciclovir;
   b) Foscarnet;
   c) Didanosine;
   d) Acyclovir;
   e) Rimantadine.

6. **Identify the correct statements about acyclovir:**
   a) Purine nucleoside analogue;
   b) Inhibits viral DNA-polymerase;
   c) Penetrates through blood-brain barrier;
   d) Does not penetrate through blood-brain barrier;
   e) Effective predominantly against Herpes simplex and Herpes zoster.

7. **Identify the correct statements about foscarnet:**
   a) Non-nucleoside analogue of pyrophosphate;
   b) Inhibits viral DNA-polymerase;
   c) Inhibits penetration of viruses into cells;
   d) Is effective against Herpes zoster virus and cytomegalovirus;
   e) Is used for the treatment of HIV.

8. **Identify the correct statements about rimantadine:**
   a) Aminoadamantane derivative;
   b) Inhibits the release of viral genome;
   c) Inhibits viral RNA synthesis;
   d) Is effective against Influenza virus A;
   e) Is administered orally.

9. Identify the correct statements about ribavirin:

a) Inhibits viral RNA and protein synthesis;
b) Inhibits viral neuraminidase;
c) Interferes with the assembly process;
d) Is effective against Influenza virus, Respiratory syncytial virus;
e) Is used orally, by inhalations, intravenously.

10. Select NS3-inhibitors for HCV treatment:

a) Telaprevir;
b) Boceprevir;
c) Simeprevir;
d) Paritaprevir;
e) Grazoprevir;
f) Daclatasvir;
g) Ledipasvir;
h) Velpatasvir;
i) Ombitasvir;
j) Elbasvir;
k) Sofosbuvir;
l) Dasabuvir.

11. Select NS5A-inhibitors for HCV treatment:

a) Telaprevir;
b) Boceprevir;
c) Simeprevir;
d) Paritaprevir;
e) Grazoprevir;
f) Daclatasvir;
g) Ledipasvir;
h) Velpatasvir;
i) Ombitasvir;
j) Elbasvir;
k) Sofosbuvir;
l) Dasabuvir.

12. Select NS5B-inhibitors for HCV treatment:

a) Telaprevir;
b) Boceprevir;
c) Simeprevir;
d) Paritaprevir;
e) Grazoprevir;
f) Daclatasvir;
g) Ledipasvir;
h) Velpatasvir;
i) Ombitasvir;
j) Elbasvir;
k) Sofosbuvir;
l) Dasabuvir.

13. Select correct statement about treatment of hepatitis C:

a) Is carried out only by combinations of NS3/4A, NS5A, NS5B inhibitors;
b) A positive result is the absence of viruses in the plasma for more than 24 weeks;
c) The cost is extremely high;
d) Specific therapy is not required, the disease is not dangerous.

14. Identify the correct statements about zidovudine:

a) Is absorbed from GIT;
b) Inhibits HIV reverse transcriptase, prevents the transcription of viral RNA into DNA;
c) Inhibits HIV proteases, prevents the synthesis of viral structural proteins and enzymes;
d) Causes bone marrow depression;
e) Is effective against all RNA-containing viruses.

15. Identify the correct statements about maraviroc:

a) Absorbed from GIT;

b) Inhibits HIV reverse transcriptase, prevents the transcription of viral RNA into DNA;

c) Inhibits HIV proteases, prevents the synthesis of viral structural proteins and enzymes;

d) Entry-inhibitor (antagonist of the chemokine receptor CCR5, prevents fusion of the virus into the host cell);

e) Is used for HIV profilaction;

f) Is effective against all RNA-containing viruses.

16. Identify the correct statements about nevirapine:

a) Is absorbed from GIT;

b) Inhibits HIV reverse transcriptase, prevents the transcription of viral RNA into DNA;

c) Inhibits HIV proteases, prevents the synthesis of viral structural proteins and enzymes;

d) Is used to treat HIV and for HIV prophylaxis;

e) Prevents mother-to-child HIV transmission;

f) Is effective against all RNA-containing viruses.

ANTIPROTOZOAL AND ANTIHELMINTIC DRUGS

1. First-line antibiotic for the treatment of mycoplasmosis and chlamydial infections is:

a) Erythromycin;
b) Cefuroxime;
c) Gentamicin;
d) Carbenicillin;
e) Vancomycin.

2. Drugs effective against preerythrocytic forms of Plasmodium malariae are:

a) Chloroquine;
b) Quinine;
c) Pyrimethamine;
d) Primaquine;
e) Mefloquine.

3. Drugs effective against paraerythrocytic forms of Plasmodium malariae are:

a) Quinine;
b) Primaquine;
c) Pyrimethamine;
d) Chloroquine;
e) Mefloquine.

4. Drugs effective against sexual forms of Plasmodium malariae are:

a) Mefloquine;
b) Methotrexate;
c) Quinine;
d) Chloroquine;
e) Primaquine.

5. Drugs used for the prevention of malaria transmission (community protection measures):

a) Affect preerythrocytic forms of Plasmodium malariae;
b) Affect erythrocytic forms of Plasmodium malariae;
c) Affect gametes;
d) Affect paraerythrocytic forms of Plasmodium malariae.

6. Drugs used for treatment of malaria (to eliminate clinical symptoms):

a) Affect preerythrocytic forms of Plasmodium malariae;
b) Affect erythrocytic forms of Plasmodium malariae;
c) Affect gametes;
d) Affect paraerythrocytic forms of Plasmodium malariae.

7. Pyrimethamine (including combinations with sulfonamides) is used for:

a) Malaria treatment;
b) Individual chemoprophylaxis of malaria;
c) Prevention of malaria relapses;
d) Prevention of malaria transmission;
e) Amoebiasis;
f) Toxoplasmosis.

8. Drugs that are active against luminal amebas:

a) Diloxanide;
b) Quiniofone;
c) Chloroquine;
d) Emetine;
e) Tetracyclines;
f) Metronidazole.

9. Drugs that are effective against amebas residing in the colonic mucosa:

a) Quiniofone;
b) Chloroquine;
c) Emetine;
d) Doxycycline;
e) Metronidazole.

10. Drugs for the treatment of trichomoniasis:

a) Policresulen;
b) Chloroquine;
c) Metronidazole;
d) Trichomonacid;
e) Tinidazole;
f) Furazolidone.

11. Drugs for the treatment of giardiasis:

a) Mepacrine;
b) Chlorquinaldol;
c) Furazolidone;
d) Metronidazole;
e) Chloroquine;
f) Tinidazole.

12. Identify the correct statements about mefloquine:

a) Causes arrhythmias;
b) Is used for the treatment of malaria symptoms;
c) Is used for the individual chemoprophylaxis of malaria;
d) Has a low toxicity;
e) Is used for the prevention of malaria transmission.

13. Identify the correct statements about chloroquine:

a) The drug of choice for the treatment of all types of malaria;
b) Is used for the treatment of malaria symptoms;
c) Is less toxic than other antimalarial agents;
d) Has a high toxicity;
e) Is used for the prevention of malaria transmission.

14. Identify the correct statements about primaquine:

a) The drug of choice for the eradication of intrahepatic plasmodia;
b) Is used only for the treatment of malaria symptoms;
c) Is active against hypnozoites;
d) Is highly toxic;
e) Is used for the prevention of malaria transmission.

15. Identify the correct statements about artesunate:

a) The drug of choice for the treatment of malaria;
b) In less severe forms of malaria can be given orally;
c) Highly toxic;
d) Is often used in combination with chloroquine;
e) Rapidly acts on blood schizonts of all human malaria parasites;
f) Has no effect on hepatic stages;
g) Is active against young, but not mature gametocytes;
h) Is used for the prevention of malaria transmission.

16. Identify the correct statements about metronidazole:

a) Is used for the treatment of malaria;
b) Is used for the treatment of amebiasis;
c) Is used for the treatment of syphilis;
d) Produces disulfiram-like reaction with alcohol;
e) Is used for the treatment of giardiasis.

17. Identify the correct statements about tinidazole:

a) Is used for the prevention of malaria transmission;
b) Is used for the treatment of trichomoniasis;
c) Is used for the treatment of all types of malaria;
d) Produces disulfiram-like reaction with alcohol;
e) Is used for the treatment of toxoplasmosis.

18. Antihelminthic drugs:

a) Metronidazole;
b) Tetracycline;
c) Praziquantel;
d) Hydrochloric acid;
e) Fluconazole;
f) Terbinafine;
h) Levamisol;
g) Cisplatin;
i) Lincomycin;
j) Tinidazole;
k) Ivermectin.

19. Which case is a contraindication for praziquantel?

a) Hydatid disease;
b) Opisthorchiasis;
c) Paragonimiasis;
d) Pork tapeworm infection;
e) Schistosomiasis.

20. Which drug enhances the actions of GABA in nematodes causing muscle paralysis?

a) Albendazole;
b) Diethylcarbamazine;
c) Ivermectin;
d) Oxamniquine;
e) Pyrantel pamoate.

ANTICANCER DRUGS

1. Cell cycle specific antineoplastic agents are:

a) Bleomycin;
b) Methotrexate;
c) Lomustine;
d) Chlorambucil;
e) Cisplatin.

2. Cell cycle non-specific antineoplastic agents are:

a) Bleomycin;
b) Methotrexate;
c) Lomustine;
d) Chlorambucil;
e) Cisplatin.

3. Antineoplastic agents — antimetabolites are:

a) Fluorouracil;
b) Methotrexate;
c) Lomustine;
d) Chlorambucil;
e) Mercaptopurine.

4. Alkylating antineoplastic agents are:

a) Bleomycin;
b) Cyclophosphamide;
c) Lomustine;
d) Chlorambucil;
e) Cisplatin.

5. Antineoplastic agents that are active against slowly growing tumors:

a) Bleomycin;
b) Methotrexate;
c) Lomustine;
d) Chlorambucil;
e) Cisplatin.

6. Identify the correct statements about lomustine:

a) Cell cycle non-specific agent;
b) Combines features of alkylating and antimetabolite agents;
c) Affects only multiplying cells;
d) Doesn’t penetrate through blood-brain barrier;
e) Is a nitrosurea derivative.

7. Identify the correct statements about chlorambucil:

a) Is cell cycle non-specific agent;
b) Is alkylating drug, damages DNA of cells;
c) Is nitrogen mustard derivative;
d) Causes bone marrow depression;
e) Is used for the treatment of HIV infection.

8. **Identify the correct statements about bleomycin:**
   a) Is cell cycle non-specific agent;
   b) Specifically interferes with G2 phase;
   c) Is folic acid antimetabolite;
   d) Produces relatively mild bone marrow depression;
   e) Is an antibiotic.
9. **Identify the correct statements about methotrexate:**
   a) Is folic acid antimetabolite;
   b) Is cell cycle non-specific agent;
   c) Is alkylating agent, damages DNA of cells;
   d) Is inorganic platinum compound;
   e) Shows relatively low toxicity.
10. **Identify the correct statements about cisplatin:**
   a) Is inorganic platinum compound;
   b) Is cell cycle non-specific agent;
   c) Is highly toxic;
   d) Is folic acid antimetabolite;
   e) Specifically interferes with G2 phase.

ANTISEPTICS AND DISENFECTANTS

1. **Correct definition of sterilization:**
   a) It is the destruction of all microorganisms including spores;
   b) It is the destruction of all microorganisms except of spores;
   c) It is the elimination of microorganisms on living tissues.
2. **Correct definition of antiseptic drugs:**
   a) It is the destruction of all microorganisms including spores;
   b) It is the destruction of all microorganisms except of spores;
   c) It is the agent used to eliminate microorganisms on living tissues;
   d) It is the agent used to eliminate microorganisms on inanimate objects.
3. **Correct definition of disinfectant:**
   a) It is the destruction of all microorganisms including spores;
   b) It is the destruction of all microorganisms except of spores;
   c) It is the agent used to eliminate microorganisms on living tissues;
   d) It is the agent used to eliminate microorganisms on inanimate objects.
4. **Mechanism of action of phenol:**
   a) Action by lowering the surface tension of solutions;
   b) It has antibacterial activity;
   c) Action by releasing nascent oxygen;
   d) Denaturation of bacterial proteins;
   e) Disruption of cell wall.

5. Choose antiseptics of aromatic series:

a) Protargol; b) Phenol; c) Formaldehyde; d) Resorcin; e) Biclotymol.

6. Correct statements about phenol:

a) It has corrosive effects on tissues;
b) It is non toxic drug after absorption through GIT;
c) Disrupt cell walls and membranes;
d) Has bacteriostatic effect;
e) Has bactericidal effect, including spores;
f) Has bactericidal effect except of spores.

7. Select a biguanid agent:

a) Miramistin; c) Hydrogen peroxide;
b) Zinc sulfate; d) Chlorhexidine.

8. Correct assertions about chlorhexidine:

a) Water soluble agent;
b) Has very low water solubility;
c) Mechanism of action is releasing nascent oxygen;
d) Action by lowering the surface tension of solutions;
e) It strongly adsorbs to bacterial membranes, causing leakage of small molecules and precipitation of cytoplasmic proteins.

9. Correct assertion about chlorhexidine:

a) It is active at pH 5.5–7.0;
b) It is active at pH 9.0–12.0;
c) It is more effective against gram-positive cocci and less active against gram-positive and gram-negative rods;
d) Does not affect spores.

10. Select antiseptics of aliphatic series:

a) Ethyl alcohol; b) Nitrofural; c) Chloramine B; d) Formaldehyde.

11. Spectrum of alcohols:

a) Vegetative bacteria; d) Hydrophilic viruses;
b) Spores; e) Fungi.
c) Mycobacterium tuberculosis;

12. Correct assertions about alcohols:

a) Use of alcohol-based hand rubs has been shown to reduce transmission of health care-associated bacterial pathogens and is recommended by the Centers for Disease Control and Prevention (CDC) as the preferred method of hand decontamination;
b) Has sporicidal activity;
c) Alcohol-based hand rubs are effective against spores of Cl. Difficile;
d) Alcohols are flammable and must be stored in cool, well-ventilated areas.

13. The following statements about formaldehyde are true:

a) Is used for disinfection or sterilization of instruments;
b) It is corrosive for metal, plastic, or rubber;
c) It is not corrosive for metal, plastic, or rubber;
d) It acts by alkylation of chemical groups in proteins and nucleic acids;
e) Mechanism of action is releasing nascent oxygen.

14. Choose oxidizers from the list:

a) Nitrofural;
b) Brilliant green;
c) Potassium permanganate;
d) Hydrogen peroxide.

15. True statements about hydrogen peroxide:

a) It has high killing activity and a broad spectrum against bacteria, spores, viruses, and fungi when used in appropriate concentration;

b) It has high killing activity and a broad spectrum against bacteria, spores, viruses, and fungi when used in any concentration;

c) It is not toxic and do not injure the environment;

d) Organisms with the enzymes catalase and peroxidase rapidly degrade hydrogen peroxide;

e) It has no sporicidal activity.

16. Iodine drugs are:

a) Acids and bases;
b) Antiseptics of aliphatic series;
c) Halogen compounds;
d) Detergents.

17. Correct statements about iodophors:

a) Iodophors are complexes of iodine with a surface-active agent;
b) Iodophors are complexes of iodine with an ethyl alcohol;

c) Spectrum of activity includes vegetative bacteria, mycobacteria, fungi, and lipid-containing viruses;

d) It acts only on bacteria and spores;

e) Iodophors are less irritating and less likely to produce skin hypersensitivity than tincture of iodine.

18. Potassium permanganate is:

a) Biguanide;
b) Halogen compound;
c) Metal compound;
d) All answers are not correct.

19. Select correct assertions about potassium permanganate:

a) 1 : 4000–1 : 10 000 solution of potassium permanganate is used for gargling;

b) Acts by releasing nascent oxygen, which oxidizes the bacterial protoplasm;

c) Colorless liquid;

d) Used for cleaning wounds and abscess cavities, removal of slough and ear wax;

e) 1 % solution is used for fungal infections — athletes foot.

20. Choose the halogen compounds:

a) Cetylpyridinium chloride; c) Boric acid;
b) Chloramine B; d) Iodine agents.

21. Purposes of chloramines usage:

a) Sterilization of instruments;
b) For dressing of wounds;
c) Used topically in tonsillitis and pharyngitis;
d) Can be used as mouthwash.

22. Correct statements about boric acids:

a) Has bactericidal activity;
b) Fungistatic and bacteriostatic;
c) Can be used for stomatitis and glossitis;
d) Non toxic after systemic absorption;
e) Systemic absorption can cause abdominal pain, diarrhoea, vomiting, visual disturbances and kidney damage.

23. Choose metal compounds:

a) Chloramine B; d) Protargol;
b) Potassium permanganate; e) Zinc sulfate.
c) Nitrofural;

24. True statements about zinc sulphate:

a) Used topically for conjunctivitis, ulcers and acne;
b) Used systemically to treat bacterial infection;
c) It decreases sweating, hence used as a component in deodorants.

25. Correct statements about cetylpyridinium chloride:

a) It is anionic surfactant;
b) It is cationic surfactant;
c) Acts by disruption of cell walls and membranes;
d) Acts by lowering the surface tension of solutions.

DRUGS AFFECTING THE RESPIRATORY SYSTEM

1. This drug dilates the bronchi by reducing parasympathetic effects:

a) Aminophylline; c) Atropine; e) Salmeterol.
b) Epinephrine; d) Isoprenaline;

2. This drug has a bronchodilator effect due to stimulation of beta2-adrenoreceptors:

a) Aminophylline; c) Ipratropium; e) Montelukast.
b) Beclomethasone; d) Isoprenaline;

3. This drug has a bronchodilator effect by suppressing the release of mediators of allergy:

a) Cromoglycic acid; c) Atropine; e) Salmeterol.
b) Epinephrine; d) Isoprenaline;

4. The antitussive drugs include:

a) Cromoglycic acid; c) Atropine; e) Beclomethasone.
b) Epinephrine; d) Dextromethorphan;

5. For the relief of bronchospasm it is indicated to use:

a) Epinephrine; c) Salmeterol; e) Acetylcysteine.
b) Cromoglycic acid; d) Tiotropium;

6. For the prevention of bronchospasm it is indicated to use:

a) Epinephrine; c) Salmeterol; e) Atropine.
b) Isoprenaline; d) Salbutamol (in aerosol);

7. A side effect of adrenergic bronchodilators is:

a) Tachycardia; d) Bronchospasm;
b) Bradycardia; e) Peripheral vasospasm.
c) Increased blood pressure;

8. Salbutamol is contraindicated in:

a) Atrioventricular blockade; d) Bronchospasm;
b) Extrasystoles; e) Anaphylactic shock.
c) Preterm labor activity;

9. Bronchodilators from the M-cholinoblockers group are contraindicated in:

a) Bradycardia; d) Diarrhea;
b) Atrioventricular blockade; e) Hyperacid gastritis.
c) Glaucoma;

10. Side effects of topical application of glucocorticosteroids in the treatment of pulmonary diseases are:

a) Reduced tolerance to the respiratory tract infections;
b) Increased resistance to respiratory infections;
c) Hypoglycaemia;
d) Complete adrenal insufficiency;
e) Atrophy of bronchial mucosa.

11. Acetylcysteine:

a) Reflexively stimulates the secretion of the bronchial glands;
b) Has a direct stimulating effect on bronchial glands;
c) Reduces the viscosity of sputum due to destruction of disulfide bonds of proteoglycans;
d) Inhibits cough reflex;
e) Relaxes the smooth muscles of the bronchi.

12. Therapeutic action of ganglionic blockers at pulmonary edema are caused by:

a) Tissue dehydration;
b) Diuretic effect;
c) Anti-inflammatory effect;
d) Reduction of the pressure in the pulmonary circulation;
e) Reduction of the load on the heart.

13. Drugs with bronchodilator action:

a) M-cholinoblockers;
b) M-cholinomimetics;
c) Ganglio-blockers;
d) Beta-blockers;
e) Beta-agonists.

14. Unlike atropine, ipratropium bromide:

a) Selectively blocks M-cholinergic receptors of the bronchi;
b) Is used only by inhalation;
c) Has a slight resorptive effect;
d) Does not affect the secretion of bronchial glands;
e) Contraindicated in glaucoma.

15. Codeine:

a) Inhibits the cough reflex;
b) Reduces the tone of the muscles of the bronchi;
c) Has analgesic properties;
d) Has a sedative effect;
e) May induce drug dependence;
f) Stimulates intestinal motility.

16. The following statements are true:

a) Propranolol can cause bronchospasm;
b) Salbutamol causes tachycardia;
c) Blockers of H_1-histamine receptors used in the treatment of allergic rhinitis;
d) Codeine does not have analgesic activity;
e) Prolonged use of α-adrenergic agonists leads to the development of rhinitis.

17. Principles of pharmacotherapy of pulmonary edema:

a) Pressure reduction in the pulmonary circulation;
b) Stimulation of the center of breathing;
c) Suppressing the foaming of the transudate;
d) Elimination of hypoxia;
e) Dehydration of respiratory tract tissues;
f) Inhibition of the cough center.

18. Medications used to treat bronchial asthma:

a) Blockers of leukotriene receptors;
b) Blockers release of mediators of allergy from mast cells;
c) Beta-adrenoreceptor agonists;
d) Alpha-adrenoreceptor agonists;
e) Local decongestants;
f) Glucocorticosteroids.

19. For the treatment of bronchial asthma it is indicated to use:

a) Bemegrid;
b) Salmeterol;
c) Beclomethasone;
d) Tiotropium;
e) Zafirlukast;
f) Xylometazoline.

20. The allergic component in bronchial asthma is suppressed by:

a) Tiotropium;
b) Salbutamol;
c) Nedocromil;
d) Theophylline;
e) Budesonide;
f) Ketotifen.

DRUGS AFFECTING THE GASTROINTESTINAL TRACT. PART I

1. What drug have the ability to reduce chemotherapy induced nausea and vomiting?

a) Benzylpenicillin; b) Aprepitant; c) Enalapril; d) Bradykinin.

2. All assertions about aprepitant are true except:

a) Agonist of NK1 receptors;
b) Crosses blood brain barrier;
c) Enhance nausea and vomiting induced by chemotherapy;
d) Metabolized by CYP450 enzymes.

3. Which of the following drugs is not an antiemetic?

a) Ondansetron;
b) Domperidone;
c) Metoclopramide;
d) Apomorphine.

4. In case of hill journey, antimotion sickness drugs are best administered:

a) Twelve hours before commencing journey;
b) One hour before commencing journey;
c) Immediately after commencing journey;
d) At the first feeling of motion sickness.

5. Which of the following prokinetic drugs produces extrapyramidal side effects?

a) Metoclopramide;
b) Promethasine;
c) Domperidone;
d) All of the above.

6. The most effective antiemetic to relieve chemotherapy induced vomiting is:

a) Domperidone; c) Metoclopramide;
b) Ondansetron; d) Promethasine.

7. Which of the following receptors are inhibited by ondansetron?

a) 5-HT_1; b) 5-HT_2; c) 5-HT_3; d) 5-HT_4.

8. Which of the following laxatives lowers blood ammonia level in hepatic encephalopathy?

a) Bisacodyl; b) Liquid paraffin; c) Lactulose; d) Magnesium sulfate.

9. Choose the correct statement about the use of opioid anti-motility drugs in the management of diarrhea:

a) They are used to control diarrhea irrespective of its etiology;
b) They should be used only as a short term measure after ensuring that enteroinvasive organisms are not involved;
c) They are used as adjuvant to antimicrobial therapy of diarrhea;
d) They are the drug of choice in irritable bowel syndrome diarrhea.

10. Bisacodyl is:

a) Bulk forming;
b) Stool softner;
c) Drug causing chemical irritation of the intestine;
d) Drug, causing mechanical irritation of the intestine.

11. A small amount of atropine is added to diphenoxylate in order to:

a) Suppress associated vomiting of gastroenteritis;
b) Increase the anti-motility action of diphenoxylate;
c) Block side effects of diphenoxylate;
d) Discourage overdose and abuse of diphenoxylate.

12. Name drugs that are effective against motion sickness:

a) Ondansetron; c) Promethazine;
b) Metoclopramide; d) Hyoscine hydrobromide.

13. Select laxatives:

a) Ondansetron; d) Lubiprostone;
b) Bisacodyl; e) Atropine.
c) Magnesium sulfate;

14. Select antidiarrheal preparations:

a) Loperamide; d) Lubiprostone;
b) Diphenoxylate; e) Racecadotrile.
c) Bisacodyl;

15. Define antidiarrheal preparations that are agonists of opioid receptors

a) Loperamide; b) Bisacodyl; c) Diphenoxylate; d) Codein.

DRUGS AFFECTING THE GASTROINTESTINAL TRACT. PART II

1. Despite their short half-lives (2 hrs), proton pump inhibitors (PPIs) cause a prolonged suppression of acid secretion (up to 48 h) because:

a) They are prodrugs and undergo activation gradually;

b) They exit from the plasma and enter acid secretory canaliculi and stay there, blocking the secretion of acid for a long time;

c) They irreversibly inhibit the proton pump molecule and hence, acid secretion requires synthesis of new proton pumps;

d) They are available as enteric coated capsules, from which drug is gradually released.

2. Drug used in H. pylori:

a) Metronidazole; b) Omeprazole; c) Mosapride; d) Amoxicillin.

3. Which of the following drugs are used for H. pylori treatment?

a) Oxytetracycline; c) Amoxicillin;
b) Bismuth compounds; d) Omeprazole.

4. Which of the following agents is beneficial in NSAID induced gastric ulcer?

a) PGE_1 agonist; c) PGD_2 agonist;
b) PGE_2 agonist; d) PGF_{2a} agonist.

5. Proton pump inhibitors are most effective when they are given:

a) After meals;
b) Shortly before meals;
c) Along with H_2 blockers;
d) During prolonged fasting periods.

6. Choose the incorrect statement about H_2 receptor blockers:

a) They are the most efficacious drugs in inhibiting gastric acid secretion;
b) They have antimicrobial activity;
c) They prevent stress ulcers in the stomach;
d) They afford the most prompt relief of ulcer pain.

7. The most effective drug for inhibiting the daily secretion of gastric acid is:

a) Omeprazole; b) Famotidine; c) Amoxicillin; d) Misoprostol.

8. In peptic ulcer, antacids are now primarily used for:

a) Preventing ulcer relapse;
b) Ulcer healing;
c) Prompt pain relief;
d) Control of bleeding from the ulcer.

9. The following anti-ulcer drugs act by reducing the secretion of or neutralizing gastric acid:

a) Aluminium hydroxide; c) Ranitidine;
b) Sucralfate; d) Omeprazole.

10. Choose the correct statements about colloidal bismuth subcitrate:

a) It causes prolonged neutralization of gastric acid;
b) It has anti H. pylori activity;
c) The side effect is blackening of the tongue and stools.

11. Which of the following proton pump inhibitor has enzyme inhibitory activity?

a) Rabeprazole; c) Pantoprazole;
b) Lansoprazole; d) Omeprazole.

12. A patient with peptic ulcer was prescribed ranitidine and sucralfate in the morning hours. Why is this combination incorrect?

a) Ranitidine combines with sucralfate and prevents its action;
b) Combination of these two drugs produces serious side effects like agranulocytosis;
c) Ranitidine increases the gastric pH so sucralfate is not able to act;
d) Sucralfate inhibits the absorbtion of ranitidine.

13. A patient is taking famotidine, sucralfate and antacid tablets. This treatment is irrational because:

a) Sucralfate decreases the absorption of famotidine;
b) Sucralfate increases the toxicity of famotidine;
c) Sucralfate decreases the absorption of antacids;
d) Sucralfate polymerizes only when gastric pH is less than 4.

14. Drugs that can be administered as anti-H. pylori therapy are:

a) Ciprofloxacin; c) Tinidazole;
b) Clarithromycin; d) Amoxicillin.

15. The following is true for anti-H. pylori therapy:

a) It is indicated in all patients with peptic ulcer;
b) Resistance to any single antimicrobial drug develops rapidly;
c) Concurrent suppression of gastric acid enhances the efficacy of the regimen;
d) Colloidal bismuth directly inhibits H. pylori but has poor patient acceptability.

16. Drug of choice for the treatment of peptic ulcer caused due to chronic use of NSAIDs is:

a) Pirenzepine; c) Misoprostol;
b) Famotidine; d) Esomeprazole.

17. M_1-blocker used in peptic ulcer disease is:

a) Pirenzepine; c) Atropine;
b) Pyridostigmine; d) Misoprostol.

18. Antacid combinations of magnesium and aluminium salts are superior to single component preparations because:

a) They have rapid as well as sustained acid neutralizing action;
b) They are less likely to affect gastric emptying;
c) They are less likely to alter bowel movement;
d) All of the above.

19. NSAIDs induced ulcer is treated by:

a) Antacids; c) Misoprostol;
b) H_2 blockers; d) PPI (proton pump inhibitors).

20. Esomeprazole acts by inhibiting:

a) H^+K^+ ATPase; c) H^+ ATPase;
b) H^+Na^+ ATPase; d) Any of the above.

21. Antacid drug that typically causes diarrhea?

a) Sodium bicarbonate;
b) Magnesium hydroxide;
c) Calcium bicarbonate;
d) Aluminium hydroxide.

22. The inhibition of hydrochloric acid (HCl) secretion by omeprazole occurs within an hour, reaches a peak at 2 hours, and plateaus by 4th day. How long does it take to normalize the secretion?

a) < 24 hours; c) 3–5 days;
b) 1–2 days; d) 6–10 days.

23. Name the drugs that are H_2 blockers:

a) Omeprazole; c) Famotidine;
b) Nizatidine; d) Ranitidine.

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