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SYLLABUS

for Theoretical Examination in Pharmacology

for Dental Medicine Students (2022/2023)

I. GENERAL PHARMACOLOGY

1. The subject of pharmacology. Historical review of pharmacology. Medicines and medicinal products. Drug nomenclature.
2. Sources of drugs. Stages of drug development.
3. Drug absorption after various routes of administration.
4. Drug distribution.
5. Drug metabolism.
6. Drug excretion. Drugs excreted in saliva. Drugs affecting salivary flow.
7. Pharmacodynamics.
8. Properties of the drug and environmental factors that affect pharmacokinetics and pharmacodynamics.
9. Factors of the human body that affect pharmacokinetics and pharmacodynamics.
10. Effects occurring after repeated or prolonged drug administration.
11. Drug interactions.
12. Adverse drug effects in the oral cavity.
13. Adverse drug effects.

II. SPECIAL PHARMACOLOGY

14. Local anaesthetics
15. General anaesthetics.
16. Antihistamines.
17. Opioid analgesics.
18. Non-steroidal anti-inflammatory drugs (NSAIDs).
19. Non-steroidal anti-inflammatory drugs (NSAIDs) with predominantly analgesic and antipyretic activity. Fixed Dose Combinations.
20. Antiseptics and disinfectants – oxidizing agents, halogen-releasing agents, phenol derivatives, essential oils.
21. Antiseptics and disinfectants – aldehydes, dyes, alcohols, detergents, acids, heavy metals.
22. Agents for pulp devitalization. Fluorides.

23. Drugs to control dental plaque. Drugs used to treat inflammation and ulcers of the oral mucosa.
24. Vitamins – clinical use.
25. Antibiotics – classification, pharmacodynamics, drug interactions.
26. Penicillins. Potentiated (protected) penicillins. Carbapenems. Monobactams.
27. Cephalosporins.
28. Tetracyclines.
29. Aminoglycosides.
30. Macrolides and ketolides.
31. Lincosamides. Amphenicols. Glycopeptides.
32. Sulfonamides. Drugs used to treat tuberculosis.
33. Quinolones. Fluoroquinolones.
34. Antifungal drugs.
35. Antiviral drugs.
36. Anticancer drugs.
37. Immunosuppressants and immunostimulants. Dental vaccines.
38. Cholinergic neurotransmission. Cholinomimetics.
39. Muscarinic antagonists (M-cholinolytics).
40. Neuromuscular blockers.
41. Adrenergic neurotransmission. Adrenomimetics.
42. Adrenolytics.
43. Anxiolytics. Sedative-hypnotic drugs.
44. Antiepileptic drugs.
45. Antipsychotics (Neuroleptics).
46. Antidepressant drugs.
47. Antiparkinson drugs.
48. Drugs used to treat heart failure.
49. Antiarrhythmic drugs.
50. Antianginal drugs.
51. Antihypertensive drugs.
52. Diuretics.
53. Hematopoietic medications.
54. Hemostatic (antihemorrhagic) drugs. Angioprotectors.
55. Anticoagulants.
56. Fibrinolytics. Antiplatelet drugs.
57. Antiasthmatic drugs. Drugs used used to treat cough.
58. Drugs used to treat peptic ulcer.
59. Antiemetic drugs. Pancreatic enzyme products. Hepatoprotective drugs.
60. Hypothalamic and pituitary hormones. Thyroid and antithyroid drugs.
61. Drugs that affect bone mineral homeostasis.
62. Antidiabetic drugs.
63. Glucocorticoids and mineralocorticoids.
64. Sex hormones. Hormonal contraceptives.
65. Drugs for medical emergencies in dental practice.

SYLLABUS

for Practical Examination in Pharmacology

for Dental Medicine Students (2022/2023)

1. Prescription – parts and types. Prescription forms. Units and abbreviations used in prescriptions. Pharmacopoeia.
2. Solid dosage forms. Prescribe: a) cefuroxime in 500 mg film-coated tablets; b) Trachisan® in lozenges.
3. Solid dosage forms. Prescribe: a) acetylsalicylic acid in 324 mg effervescent tablets; b) glyceryl trinitrate in 0.5 mg sublingual tablets.
4. Solid dosage forms. Prescribe: a) loratadine in 5 mg orodispersible tablets; b) Prescribe sulfathiazole as an officinal dermal powder in 10 g vials.
5. Solid dosage forms. Prescribe: a) doxycycline in 100 mg hard capsules; b) verapamil in 120 mg slow-release tablets.
6. Prescribe 20 magistral oral powders, each containing 50 mg coffeinum natrii benzoas and 500 mg metamizole.
7. Semisolid dosage forms. Prescribe: a) miconazole in 2% 40 g officinal oral gel; b) 2 tubes, each containing a 5% 40 g lidocaine dermal ointment.
8. Semisolid dosage forms. Prescribe: a) paracetamol in 150 mg officinal suppositories; b) 5 fentanyl transdermal therapeutic system (TTS) patches, 50 micrograms/h each.
9. Solutions. Prescribe: a) a 4% 150 ml solution of sodium citrate for oral administration – in abbreviated and unabbreviated form; b) a 5% 50 g alcohol solution of iodine for topical application.
10. Liquid dosage forms. Prescribe: a) 1 vial of nasal drops, containing a 0.1% 10 ml xylometazoline solution; b) diclofenac in 0.074% 200 ml mouthwash.
11. Suspensions. Prescribe 1 vial containing amoxicillin granules (250 mg/5 ml – 60 ml) for the reconstitution of an oral suspension for a child weighing 12 kg. The daily dose is 50 mg/kg and should be divided into 3 equal doses.
12. Tinctures. Prescribe 20 g of Valerian tincture.
13. Prescribe a 10 g/200 g infusion from the leaves of Venetian sumach and label that 10 drops should be dissolved in 100 ml of water and the infusion used for rinsing of the mouth cavity.
14. Injection dosage forms. a) Prescribe: 5 ampoules, each containing a 5% 2 ml pethidine solution; b) 20 vials, each containing 1 000 000 IU of benzylpenicillin; together with 10 ampoules, each containing a 10 ml saline solution (to yield a 200 000 IU/1 ml solution).
15. Gaseous dosage forms. Prescribe: a) an officinal metered dose inhaler (MDI) containing an aluminum canister with no less than 200 puffs (doses), 100 micrograms of salbutamol each; b) azelastine in a 0.1% 10 ml nasal spray.
16. In patients with normal renal function the plasma half-life of gentamicin is 2 h and its dosing interval is 8 h. What should the corrected dosing interval of gentamicin be in patients with an urinary tract infection and impaired renal function, which cause prolongation of gentamicin plasma half-life to 15 h?

17. Calculate the volume of distribution of propranolol, knowing that that after a single oral dose of 30 mg its steady-state plasma concentration reaches 100 ng/ml.
18. Choose and prescribe a muscarinic antagonist (M-cholinolytic) as a 1 mg/1 ml solution for injection in ampoules (atropine, adrenaline, pilocarpine).
19. Choose and prescribe in 0.5% 1 ml ampoules a Bulgarian anticholinesterase drug isolated from Caucasian snowdrop (carbachol, neostigmine, galantamine).
20. Prescribe in 10 mg tablets a semisynthetic derivative of scopolamine which does not pass the blood brain barrier and has spasmolytic activity.
21. Choose and prescribe in 5 mg tablets an alpha-1-adrenomimetic drug indicated for the treatment of arterial hypotension (midodrine, xylometazoline, ephedrine).
22. Choose and prescribe an adrenomimetic drug that activates alpha, beta-1 and beta-2 adrenergic receptors (noradrenaline, isoprenaline, adrenaline).
23. Choose and prescribe in 2 mg tablets a bronchodilator, which induces tachyarrhythmia least frequently (isoprenaline, salbutamol, propranolol).
24. Choose and prescribe in 25 mg tablets a nonselective beta-adrenergic blocker with membrane stabilizing activity (atenolol, nebivolol, propranolol).
25. Choose and prescribe in 0.5 mg sublingual tablets a drug used to treat angina attack (nebivolol, nifedipine, glyceryl trinitrate).
26. Choose and prescribe in 5 mg tablets a cardioselective beta-blocker for the treatment of arterial hypertension (carvedilol, propranolol, bisoprolol).
27. Choose and prescribe an antiarrhythmic drug for the treatment of severe ventricular and supraventricular arrhythmias as a 150 mg/3 ml solution in vials (verapamil, amiodarone, metoprolol).
28. Choose and prescribe in 20 mg tablets an angiotensin-converting enzyme (ACE) inhibitor (enalapril, valsartan, hydrochlorothiazide).
29. Choose and prescribe a central alpha-2 adrenergic receptors agonist with antihypertensive effect as a 0.15 mg/1 ml solution for intramuscular injection (nifedipine, prazosin, clonidine).
30. Choose and prescribe a loop diuretic in 20 mg/2 ml ampoules (mannitol, spironolactone, furosemide).
31. Choose and prescribe in 10 mg film-coated tablets a dihydropyridine calcium channel blocker used for the treatment of arterial hypertension (diltiazem, amlodipine, perindopril).
32. Choose and prescribe an antianaemic drug in 325 mg film-coated tablets (Ferinject®, Diafer®, Ferro-Gradumet®).
33. Prescribe a solution in ampoules containing coagulation factor IV, which is also suitable for the treatment of allergic reactions.
34. Choose and prescribe in 250 mg/2 ml ampoules a haemostatic drug which may be applied locally after dental extraction (epoetin alfa, etamsylate, cyanocobalamin).
35. Choose and prescribe in 5 ampoules, 1000 mg/10 ml each, a haemostatic drug that is administered slowly intravenously for the treatment of bleeding associated with activated local or generalized fibrinolysis (tranexamic acid, heparin, clopidogrel).
36. Choose and prescribe an antiplatelet drug that inhibits thromboxane A2 biosynthesis (acetylsalicylic acid, protamine sulfate, dabigatran).

37. Prescribe in 20 mg/0.2 ml pre-filled syringes a low-molecular-weight heparin derivative administered subcutaneously to prevent blood clots and treat venous thromboembolism (rivaroxaban, enoxaparin, alteplase).
38. Prescribe a vitamin K antagonist in 4 mg tablets (heparin, acenocoumarol, phytomenadione).
39. Choose and prescribe in 1% 2ml ampoules an H_1-receptor antagonist used to treat acute allergic reactions (chloropyramine, famotidine, adrenaline).
40. Choose and prescribe a 2nd generation H_1-receptor antagonist in 10 mg tablets (promethazine, loratadine, hydroxyzine).
41. Choose and prescribe in 2.4% 10 ml ampoules a phosphodiesterase inhibitor that can be administered intravenously to treat an asthma attack (formoterol, ipratropium, aminophylline).
42. Prescribe a drug with mucolytic activity in a 15 mg/5 ml – 100 ml syrup (ambroxol, fluticasone, tiotropium).
43. Choose and prescribe in 20 mg capsules an antiulcer proton-pump inhibitor drug (esomeprazole, ranitidine, misoprostol).
44. Choose and prescribe in 8 mg tablets a selective 5-HT_3 receptor antagonist (metoclopramide, dimenhydrinate, ondansetron).
45. Choose and prescribe in 40 mg/2 ml ampoules a phosphodiesterase 4 inhibitor with spasmolytic activity (bisacodyl, lactulose, drotaverine).
46. Choose and prescribe in 2 mg capsules an antidiarrheal drug which stimulates the μ and δ opiod receptors in the gastrointestinal tract (diosmectite, racecadotril, loperamide).
47. Choose and prescribe in 7.5 mg tablets a Z-drug used to treat insomnia that is prescribed on a green prescription form (zopiclone, nitrazepam, phenobarbital).
48. Prescribe in 60 mg sublingual tablets a sedative drug, containing a menthyl ester of isovaleric acid.
49. Choose and prescribe a benzodiazepine anxiolytic drug in 0.5 mg tablets (hydroxyzine, buspirone, alprazolam).
50. Choose and prescribe in 200 mg tablets an antiepileptic drug used to treat trigeminal and postherpetic neuralgia (valproic acid, carbamazepine, phenytoin).
51. Choose and prescribe in 5 mg/2 ml ampoules an antiepileptic drug used to treat status epilepticus (diazepam, ethosuximide, bromazepam).
52. Choose and prescribe in 5 mg/1 ml ampoules a neuroleptic used to treat acute psychosis (clonazepam, clozapine, haloperidol).
53. Choose and prescribe in 20 mg capsules an antidepressant that selectively inhibits the reuptake of serotonin into neurons (fluoxetine, moclobemide, imipramine).
54. Prescribe in 250 mg tablets a plant-derived drug used to treat mild to moderate depression (Remotiv®, chlorpromazine, risperidone). From which herb is this drug derived?
55. Choose and prescribe in 5% 2 ml ampoules a synthetic opioid analgesic with spasmolytic activity (morphine, fentanyl, pethidine).
56. Choose and prescribe (as separate prescriptions) fentanyl in 0.005% 2 ml vials and droperidol in 0.25% 2 ml vials. Describe the concept of neuroleptanalgesia.
57. Prescribe a pyrazolone analgesic drug in 500 mg tablets and 50% 20 ml oral drops.

58. Choose and prescribe in 200 mg soft capsules a propionic acid derivative NSAID (ibuprofen, oxycodone, celecoxib).
59. Prescribe a paste, containing indometacin, oleandomycin and dexamethasone used to treat lesions of the oral mucosa. Explain the therapeutic rationale of this fixed dose combination.
60. Prescribe in 5 ampoules, 1.7 ml each, Ubistesin® – a drug for parenteral use that contains articaine and epinephrine. Explain the therapeutic rationale of this fixed dose combination.
61. Prescribe a fixed dose combination in lozenges that contains lidocaine, chlorhexidine and tyrothricin. Explain the therapeutic rationale of this combination.
62. Choose and prescribe, as a 3% 1.7 ml solution in 5 ampoules, a synthetic local anesthetic from the amide group used for infiltration or submucosal intraoral anesthesia (mepivacaine, chlorocaine, tetracaine).
63. Prescribe a lidocaine dermal spray in 38 g vials.
64. Choose and prescribe, as a 3% 100 ml solution, an antiseptic with a hemostatic effect (Solutio Iodi spirituosa, Solutio physiologica, Solutio Hydrogenium peroxydum diluta).
65. Choose and prescribe a 10% 100 g iodine-containing antiseptic ointment (povidone-iodine, chlorhexidine, ethacridine).
66. Choose and prescribe, as a 0.2% 300 ml solution in vials, an oromucosal antiseptic that contains chlorhexidine (Corsodyl®, Tantum Verde®, Efisol®).
67. Choose and prescribe, as a 1% 100 ml dermal solution, an antiseptic with revulsive effect (Spiritus Lavandulae, Silver nitrate, Boric acid).
68. Choose and prescribe in 1 000 000 IU tablets an acid-stable penicillin drug used to treat acute bacterial tonsillitis (piperacillin, cefalexin, phenoxymethylpenicillin).
69. Choose and prescribe in 1000 mg film-coated tablets a broad-spectrum semi-synthetic aminopenicillin with very good intestinal absorption (amoxicillin, ampicillin, meropenem).
70. Prescribe in 625 mg film-coated tablets amoxicillin potentiated (protected) with clavulanic acid (Ampisulcillin®, Tazocin®, Augmentin®).
71. Choose and prescribe in 500 mg tablets a 2nd generation cephalosporin with high anti-staphylococcal activity (cefazolin, vancomycin, cefuroxime).
72. Choose and prescribe in 500 mg film-coated tablets a macrolide antibiotic used to treat gastric ulcer disease, associated with a *Helicobacter pylori* infection (amoxicillin, cefoperazone, clarithromycin).
73. Choose and prescribe a fixed dose combination antibiotic used to treat and prevent chronic periodontitis (Tienam®, Rodogyl®, Biseptol®).
74. Choose and prescribe in 500 mg capsules two antibiotics in a rational combination (ampicillin and tetracycline; gentamicin and tobramycin; amoxicillin and cloxacillin).
75. Choose and prescribe a lincosamide antibiotic in 300 mg capsules (clindamycin, azythromycin, amikacin).
76. Choose and prescribe in 480 mg tablets a fixed dose combination containing a sulfonamide and trimethoprim (Biseptol®, Sulperazon®, Tazocin®).
77. Choose and prescribe in 250 mg film-coated tablets a drug used to treat dental and orofacial anaerobic soft tissue infections (metronidazole, ciprofloxacin, rifampicin).

78. Choose and prescribe in 500 mg film-coated tablets a fluoroquinolone used to treat chronic prostatitis (levofloxacin, cefepime, lincomycin).
79. Choose and prescribe an antifungal antibiotic used to treat oropharyngeal candidiasis; it is to be prescribed in granules for oral suspension, yielding a 100.000 IU/ml – 50 ml reconstituted suspension (clotrimazole, terbinafine, nystatin).
80. Choose and prescribe in 75 mg capsules a drug used to treat and prevent influenza (oseltamivir, lamivudine, ganciclovir).
81. Choose and prescribe as a cream a drug used to treat primary and recurrent herpes simplex labialis (aciclovir, interferon alfa-2a, inosine pranobex).
82. Choose and prescribe in 500 mg film-coated tablets an oral biguanide drug used to treat type 2 diabetes (metformin, glibenclamide, acarbose).
83. Choose and prescribe a glucocorticoid, used to treat allergic reactions; it is to be prescribed in 5 vials, each containing 40 mg powder that is used to prepare a solution for injection (methylprednisolone, clobetasol, adrenaline).
84. Prescribe in 25 microgram tablets a thyroid drug used to treat hypothyroidism (propylthiouracil, levothyroxine, thiamazole).
85. Choose and prescribe an insulin used to treat hyperglycaemic coma (Humulin® R, Insulatard®, Insulin detemir).
86. Prescribe 0.144% 100 ml oral drops, containing sodium fluoride.
87. Prescribe 20000 IU/ml 10 ml oral drops, containing cholecalciferol (Vigantol®), for the prevention of rickets.

RECOMMENDED LITERATURE

1. Basic & Clinical Pharmacology with toxicology. Edited by Nadka Boyadjieva, ARSO, 2021
2. Essentials of Pharmacology for Dentistry, 4th Edition, Tripathi KD. Jaypee Brothers Medical Publishers, 2021
3. Pharmacology for Dentistry, 4th Edition, Tara V Shanbhag, Smita Shenoy, Veena Nayak. ELSEVIER, 2021.
4. Pharmacology for Dentistry by Dr. Surender Singh. New Age International Pubishers, 2007.
5. www.medpharm-sofia.eu