

Dental Pharmacology 2005
EXAM 2
March 4, 2005
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INSTRUCTIONS:

1. There are 40 questions on this exam. Please use pencil on the answer sheet. Including the Bonus Questions, *there are 8 (eight) pages on this exam*. Turn in the answer sheet. KEEP the exam.
2. There are several **BONUS** questions at the end of the exam. You are NOT required to answer these. If you answer them, *nothing* will be deducted for a wrong answer. However, if you answer correctly, I will use that question to replace a question on the regular exam that you answered incorrectly. That is, if you get 30 of the 40 questions correct and answer 3 of the bonus questions correctly, then your score would be 33/40 or 82.5%.

1. The bacterial enzymes that inactivate penicillins and cephalosporins are
 - A. β -lactamases.
 - B. DNA gyrases.
 - C. *erm* methylases.
 - D. *mef* efflux proteins.
2. Among the enzymes responsible for synthesizing bacterial cell walls are
 - A. transpeptidases and carboxypeptidases.
 - B. ligases.
 - C. esterases.
 - D. methyl formylases.
3. Imipenem is a unique β -lactam because it
 - A. has a very short half life.
 - B. serves to inactivate penicillins binding proteins and β -lactamases.
 - C. acts on aminoglycoside transferases.
 - D. interferes with DNA segregation.
4. A known side effect of tetracyclines is that it
 - A. stains the enamel of teeth.
 - B. causes nail discoloration.
 - C. interferes with mental functions by inhibiting GABA transmission.
 - D. causes prolongation of the QT interval.
5. While in general quinolones are safe antibiotics, a recognized side effect is
 - A. prolongation of the QT interval.
 - B. tinnitus.
 - C. ataxia.
 - D. incontinence.

6. Pill dysphagia is seen with
 A. tetracycline.
B. nitrofurantoin.
C. trimethoprim.
D. sulfamethoxazole.
7. Interference with folate synthesis is seen with
A. clindamycin.
B. tetracycline.
C. chloramphenicol.
 D. sulfamethoxazole.
8. Which of the following antibiotics interfere with bacterial protein synthesis?
A. metronidazole.
B. quinolones.
 C. penicillin.
 D. macrolides.
9. The most likely antibiotic to cause prolongation of the prothrombin time when patients are taking coumadin are
A. tetracycline.
 B. chloramphenicol.
C. trimethoprim.
 D. rifampin.
10. Which of the following drugs is NOT used to treat *Mycobacterium tuberculosis*?
 A. Isoniazid
 B. Rifampin
 C. Ethambutol
- Streptomycin
- Chloramphenicol
11. A known side effect of isoniazid is
A. tinnitus.
B. arthralgias.
 C. hepatitis.
D. peripheral neuropathy.
12. Which of the following drugs should NOT be used to treat influenza in the first 36 hours?
 A. Amantadine
 B. Rimantadine
 C. Erythromycin
D. Relenza

13. All of the following are drugs used to treat HIV infection EXCEPT
- A. AZT.
 - B. DDI.
 - C. 3TC.
 - D. amantadine.
14. The cell count (cells/ml) of which one of the following cell types is an important predictor of opportunistic infections in patients with HIV?
- A. Platelets
 - B. CD8+ lymphocytes
 - C. Neutrophils
 - D. CD4+ lymphocytes
 - E. stem cells
15. Using trimethoprim-sulfamethoxazole as prophylaxis in HIV protects against
- A. PCP.
 - B. pneumococcal pneumonia.
 - C. influenza.
 - D. RSV pneumonia.
16. The mechanism of action of AZT is best described by which of the following?
- A. Molecular rearrangements
 - B. DNA translocation
 - C. DNA inversion
 - D. Chain termination
17. Which of the following is the drug of first choice in treating trigeminal neuralgia?
- A. Phenobarbital
 - B. Buspirone
 - C. Disulfiram
 - D. Carbamazepine
 - E. Naltrexone
18. All of the following receptors are all ligand-gated ion channels EXCEPT
- A. GABA_A receptor.
 - B. dopamine D2 receptor.
 - C. nicotinic acetylcholine receptor.
 - D. 5HT₃ receptor.
 - E. NMDA (Glutamate) receptor.
19. Benzodiazepines exert their anxiolytic effects by
- A. enhancing the actions of dopamine.
 - B. inhibiting the actions of serotonin.
 - C. inhibiting dopamine reuptake.
 - D. enhancing the actions of GABA.
 - E. enhancing norepinephrine biosynthesis.

20. Disulfiram, a drug used in treating alcohol abuse, exerts its effects primarily by
- A. blocking activation of the GABA_A receptor.
 - B. inhibiting activation of the NMDA glutamate receptor.
 - C. blocking serotonin reuptake.
 - D. inhibiting dopamine reuptake.
 - E. blocking aldehyde dehydrogenase.
21. Anticonvulsants exert their effects by all of the following mechanisms EXCEPT
- A. depressing the action of dopamine.
 - B. modifying the activity of voltage-gated Na⁺ channels.
 - C. enhancing the action of γ -aminobutyric acid (GABA).
 - D. depressing the action of glutamate.
 - E. inhibiting both voltage-gated Na⁺ channels and enhancing GABA_A receptor activity.
22. Gingival hyperplasia is a common side effect of
- A. phenytoin.
 - B. tiagabine.
 - C. morphine.
 - D. gabapentin.
 - E. carbamazepine.
23. All of the following statements concerning benzodiazepines are correct EXCEPT
- A. The duration of action of a benzodiazepine can be dependent on the half-life of an active metabolite.
 - B. Benzodiazepines inhibit glutamate receptor activation.
 - Benzodiazepines can be sedating.
 - Benzodiazepines cause short-term memory impairment.
24. Which of the following statements about Carbidopa, a drug used to treat Parkinson's disease, is correct?
- A. Carbidopa crosses the blood-brain barrier.
 - B. Carbidopa activates dopamine β -hydroxylase.
 - C. Carbidopa inhibits aromatic L-amino acid decarboxylase.
 - D. Carbidopa inhibits monoamine oxidase.
 - E. Carbidopa is converted to the false transmitter carbidopamine.
25. All of the following statements about antipsychotics are correct EXCEPT
- A. Most classical antipsychotic drugs block dopamine receptors in the brain.
 - B. Some of atypical antipsychotics act at serotonin receptors.
 - C. The effects of antipsychotics are immediate.
 - D. Antipsychotics can cause Parkinsonism-like side effects.
 - E. Dopamine agonist drugs exacerbate schizophrenia.

26. Bacteria can rapidly evolve to develop resistance to antibiotics by all of the following mechanisms EXCEPT
- A. Inactivation of enzymes that metabolize antibiotics.
 - B. Altering (mutating) the target of the antibiotic.
 - C. Expressing efflux pumps for the antibiotic.
 - D. Altering expression of porin channels.
 - E. Secretion of antitoxins.
27. Which of the following drugs is directed against a target in fungal cell walls?
- A. Amphotericin A
 - B. Trimethoprim-sulfamethoxazole
 - C. Flucytosine
 - D. Caspofungin
 - E. Voriconazole
28. Which of the following drugs should always be administered with another antifungal agent?
- A. Amphotericin A
 - B. Trimethoprim-sulfamethoxazole
 - C. Flucytosine
 - D. Caspofungin
 - E. Voriconazole
29. All of the following antifungal agents have some efficacy against *Aspergillus* spp. EXCEPT
- A. Amphotericin A
 - B. Fluconazole
 - C. Voriconazole
 - D. Itraconazole
 - E. Caspofungin
30. Antacids should NOT be given to patients taking which of the following antifungal drugs?
- A. Amphotericin A
 - B. Fluconazole
 - C. Voriconazole
 - D. Itraconazole
 - E. Caspofungin
31. Which of the following antifungal drugs at therapeutic doses is most likely to cause abnormal vision, skin rashes and intrahepatic cholestasis?
- A. Amphotericin A
 - B. Fluconazole
 - C. Voriconazole
 - D. Itraconazole
 - E. Caspofungin

32. Benzodiazepines are used primarily to treat which of the following conditions?
 A. Psychosis
 B. Depression
 C. Anxiety
 D. Parkinson's disease
 E. Trigeminal neuralgia
33. Which of the following drugs or classes of drugs does NOT bind to or interact with GABA_A receptors?
 A. Barbiturates
 B. Benzodiazepines
 C. Ethanol
 D. Catecholamines
34. Tetracycline antibiotics are considered "broad-spectrum" antibiotics because they are effective against all of the following EXCEPT
 A. most Gram-positive bacteria growing aerobically.
 B. most Gram-negative bacteria growing anaerobically.
 C. *Mycobacteria*.
 D. fungal pathogens.
35. Cephalosporins exert their bacteriocidal effects at the
 A. ribosome.
 B. cell nucleus.
 C. cell membrane.
 D. cell wall.
36. All of the following can be used to treat depression EXCEPT
 SSRI's.
 monoamine oxidase inhibitors.
 C. gabapentin.
 tricyclic antidepressants.
37. Which of the following statements concerning cephalosporins is correct?
 A. They are effective inhibitors of cell wall synthesis.
 B. Most oral anaerobic bacteria are insensitive to cephalosporins.
 C. They contain a modified β -lactam ring.
 D. They are related to penicillins.
38. Which of the following classes of antibiotics can cause ototoxicity at high doses?
 A. Tetracyclines
 B. Vancomycin
 C. Aminoglycosides
 D. Penicillins
 E. Erythromycin

39. Fungi come in a variety of flavors. All of the following statements about fungi are correct EXCEPT
- A. Yeasts are fungi that are usually round and smooth.
 - B. Molds are fungi that form hyphae as part of their life cycle.
 - C. Among the groups of fungi, dermatophytes belong the molds.
 - D. Dimorphic fungi are rounded when infecting tissues but form hyphae when in culture.
 - E. *Candida* spp. are examples of molds.
40. Among the following receptor types, antipsychotic drugs primarily antagonize
- A. GABA_A receptors.
 - B. catecholamine receptors.
 - C. glutamate receptors.
 - D. acetylcholine receptors.
 - E. dopamine receptors.

IT'S THE BONUS ROUND!!!!!!

41. Hepatic blood flow and intrinsic hepatic clearance are important factors in the clearance of drugs with which of the following characteristics?
- A. Very water soluble
 - B. Polypeptide structure
 - C. Multiple charges
 - D. Volatile gas
 - E. Minimal renal excretion
42. Two drugs, A and B, have the same mechanism of action. Drug A in a dose of 5 mg produces the same magnitude of response as Drug B in a dose of 500 mg. Which of the following statements is CORRECT?
- A. Drug A is less toxic.
 - B. Drug A is more efficacious (greater maximal effect).
 - C. Drug A is more potent.
 - D. Drug A has a shorter duration of action.
 - E. Drug A is a better drug to use when a maximal response is desired.
43. The rate of absorption of a drug will determine
- A. steady-state plasma concentration.
 - B. systemic clearance.
 - C. bioavailability.
 - D. peak plasma concentration.
 - E. intrinsic clearance.
44. Which of the following drugs has NO antiinflammatory properties?
- A. Aspirin
 - B. Vioxx
 - C. Ibuprofen
 - D. Acetaminophen
 - E. Prednisone
45. All of the following are correct statements about cells EXCEPT
- A. bacteria have no nucleus.
 - B. you and I have 46 chromosomes (we hope).
 - C. bacteria cannot grow in the absence of oxygen.
 - D. most but not all bacteria have a single chromosome.
 - E. bacteria can grow in deep sea vents at temperatures of 90 °C under >200 atmospheres of pressure.
46. The Indians will win the World Series this year because
- A. the Red Sox finally won, so miracle's really happen.
 - B. George Steinbrenner will sell the Yankees and buy the Indians.
 - C. Which World Series, Little League or Professional Baseball?
 - D. palm trees will suddenly sprout up on our country's "North Shore".
 - E. George Bush drafts all the players on the other teams.