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**DENTAL PHARMACOLOGY  
EXAMINATION # 2**

**March 01, 2007**

You have ONE (1) hour and 15 minutes to complete this examination. The examination contains 50 questions, each worth 2 points.

Answer all questions on the computer sheet provided; use a soft lead pencil. Be sure that you have correctly identified your answer sheet by PRINTING your name and TUID number and correctly filling in the grid spaces. You may keep your exam booklet. Answers and grades will be posted on Blackboard.

This examination is being administered under the Honor Code of Temple University Dental School.

# PHARM EXAM 2

2007

Questions 1 – 50: Select the single, most appropriate answer.

1. The chronic treatment of heart failure and consequent improved life expectancy most likely involves a diuretic and which of the following drugs?

- B
- A. Epinephrine
  - ☒ B. An ACE inhibitor *HYPERTENSION*
  - C. A calcium channel blocker
  - D. A cholinergic agonist
  - E. An antihistamine

2. Digoxin produces all of the following effects **EXCEPT**:

- A
- ☒ A. An increase in intracellular potassium
  - B. An increase in intracellular calcium
  - C. Prolongation of the P-R interval of the EKG
  - D. Nausea and visual disturbances
  - ~~E. An increase in cardiac efficiency in the failing heart~~

3. A 50-year-old airline pilot complains of seasonal allergies. Which one of the following drugs is most useful in relieving his symptoms, with minimal sedation?

- B
- ☒ A. Diphenhydramine
  - B. Fexofenadine
  - C. Chlorpheniramine
  - D. Promethazine
  - ~~E. Haloperidol~~

4. All of the following conditions have been attributed to excessive alcohol consumption, **EXCEPT**:

- E
- ~~A. Cirrhosis of the liver~~
  - ~~B. Korsakoff's psychosis~~
  - ~~C. Fetal alcohol syndrome~~
  - ☒ D. Congestive heart failure
  - ~~E. Coronary artery disease~~

5. A young child ingests a number of iron pills resulting in acute toxicity. Which of the following agents would be the most appropriate antidote?

- D
- ~~A. Ferrous sulfate~~
  - ~~B. Leucovorin~~
  - ~~C. Cyanocobalamin~~ *B12*
  - ☒ D. Deferoxamine
  - E. Erythropoietin

6. Before beginning folate therapy for megaloblastic anemia, a physician should consider treatment of which of the following to prevent neurological disease?

- A. Vitamin B12 deficiency  
B. Zinc deficiency  
C. Iron deficiency  
D. Vitamin B6 deficiency  
E. Vitamin C deficiency

7. Which of the following statements regarding antiarrhythmic drugs is most correct?

- A. Beta adrenoceptor blockers are positive inotropic drugs  
B. Lidocaine is mainly used to treat atrial arrhythmias  
C. Quinidine must be given parenterally  
D. Procainamide is associated with a reversible lupus-like syndrome  
E. Propranolol increases the rate of phase 4 depolarization

8. Which antihyperlipidemia drug causes cutaneous flushing and itching, and decreases VLDL by inhibiting lipolysis in adipose tissue?

- A. Cholestyramine  
B. Gemfibrozil  
C. Lovastatin  
D. Niacin  
E. Neomycin

9. Which of the following drugs binds bile acids in the intestine, preventing their return to the liver?

- A. Cholestyramine  
B. Gemfibrozil  
C. Lovastatin  
D. Niacin  
E. Neomycin

10. Which of the following drugs has the following actions: 1) decreases automaticity of the SA node; 2) decreases conduction rate in the AV node, but not in the atria or ventricles; 3) can cause gingival hyperplasia; and 4) dilates coronary arteries?

- A. A  $\beta$ -adrenergic receptor agonist  
B. A calcium channel blocker  
C. A potassium channel blocker  
D. A sodium channel blocker  
E. A muscarinic receptor blocker



11. Which of the following is a platelet antagonist that needs liver metabolism for activation?

- A. Aspirin
- B. Salicylate
- ☒ C. Abciximab
- D. Amicar
- E. Clopidogrel

12. The major side effect of heparin is

- A. Excessive bleeding
- B. Fetal abnormalities
- C. Elevation of hepatic transaminases
- ☒ D. Renal failure
- E. Inhibition of aldosterone synthesis

13. Which of the following drugs and related routes of administration would be most useful in the prophylaxis of vasospastic angina?

- A. Nitroglycerin – sublingual
- B. Nifedipine – intravenous
- C. Amyl nitrite – inhalation
- ☒ D. Nitroglycerin – intravenous
- E. Verapamil – oral

14. Which of the following drugs is most likely to increase fetal mortality if given during pregnancy?

- A. Captopril
- B. Diazoxide
- C. Guanethidine
- D. Hydralazine
- ☒ E. Minoxidil

15. Which one of the following drugs blocks beta-1 adrenergic receptors?

- A. Minoxidil
- ☒ B. Atenolol
- C. Clonidine
- D. Enalapril
- E. Hydrochlorothiazide

MDMA

16. Repeated use of methylene-dioxy-methamphetamine is most likely to cause neuronal depletion of which neurotransmitter?

- ☒ A. Serotonin
- B. GABA
- C. Dopamine
- D. Acetylcholine
- E. Norepinephrine

17. Excited Delirium is a condition characterized by psychosis, agitation, and hyperthermia. It often ends in respiratory arrest and sudden death. This syndrome is most associated with use of high doses of which of the following drugs?

- A. Heroin
- B. Ethanol
- C. Amphetamine
- ☒ D. Cocaine
- E. Ketamine

18. Which of the following drugs has the lowest analgesic efficacy?

- A. Morphine
- B. Meperidine
- C. Fentanyl
- D. Propoxyphene
- ☒ E. Butorphanol

19. Which of the following is the most likely cause of death from an acute overdose of morphine?

- A. Cerebral hemorrhage
- B. Cardiac arrhythmias
- C. Status epilepticus
- D. Renal failure
- ☒ E. Respiratory depression

20. A selective agonist at mu opioid receptors is likely to produce all of the following effects **EXCEPT**:

- A. Nausea
- ☒ B. Analgesia
- C. Constipation
- D. Respiratory depression
- ☒ E. Mydriasis

21. The mechanism of action of acetaminophen is

- A. Potent non-selective inhibitor of COX-2 activity
- ☒ B. Selective inhibitor of COX-1 activity
- C. Potent selective inhibitor of COX-2 activity
- ~~D.~~ Weak prostaglandin synthesis inhibitor
- ~~E.~~ Strong inhibitor of thromboxane synthetase

22. Naproxen is a popular drug used to treat mild pain in a variety of disease settings. The characteristics of this drug include

- A. Is a potent selective inhibitor of interleukin 2 synthesis
- B. Is a potent selective inhibitor of tumor necrosis factor receptor activation
- ~~C.~~ Is a less effective analgesic than aspirin because of its very short half-life (<2hrs)
- ☒ D. Demonstrates a long half-life (approx 13 hrs) in the blood
- E. Is associated with Reye's syndrome

23. Your patient is being treated for a severe form of osteoarthritis. She informs you that her treatment includes Etanercept. This DMARD exhibits excellent anti-inflammatory activity, and has the following characteristic:

- A. Is an advanced COX-2 inhibitor with few cardiovascular adverse reactions
- ☒ B. Is a selective inhibitor of purine and pyrimidine synthesis, and is commonly employed as an anti-cancer therapeutic drug
- C. Its anti-inflammatory effects are due to high-affinity binding of tumor necrosis factor alpha
- D. Its anti-inflammatory effects are due to selective binding to the interleukin 2 receptor
- ~~E.~~ Is a metabolite of penicillin, and works by trapping free radicals

24. Hypokalemia, hyperglycemia, hyperuricemia and hypercalcemia would most likely occur during therapy with

- A. Furosemide
- B. Acetazolamide
- C. Ethacrynic acid
- ☒ D. Hydrochlorothiazide
- E. Hydrochlorothiazide – spironolactone combination



25. Which of the following effects is **LEAST** likely to develop as a result of therapy with loop diuretics?

- C
- A. Hyponatremia  $Na^+$
  - ~~B.~~ Hypovolemia
  - ☒ C. Hypercalcemia  $CALCIUM$
  - D. Hyperuricemia
  - ~~E.~~ Hypokalemia  $K$

~~26.~~ Each of the following drugs is matched with its indicated effect **EXCEPT**:

- A
- ~~A.~~ Amiloride – corrects severe pulmonary edema
  - ☒ B. Furosemide – could be lifesaving in congestive heart failure
  - ~~C.~~ Hydrochlorothiazide – effective antihypertensive action
  - ~~D.~~ Acetazolamide – decreases intraocular pressure
  - E. Triamterene – useful in hypokalemia

27. Which of the following is a centrally-acting antitussive with no analgesic or addictive properties and may release histamine?

- E
- ~~A.~~ Acetylcysteine
  - B. Codeine
  - C. Guaifenesin
  - ~~D.~~ Morphine
  - ☒ E. Dextromethorphan

28. Which of the following drugs is an effective cough suppressant?

- C
- A. Acetaminophen
  - B. Bromocriptine
  - ☒ C. Codeine
  - D. Dantrolene
  - E. Ibuprofen

29. Which of the following drugs has the greatest beta-2 adrenergic receptor selectivity, produces less cardiac stimulation than isoproterenol, is an effective bronchodilator, and causes tremor with oral use?

- D
- A. Epinephrine
  - B. Theophylline
  - C. Zafirlukast
  - ☒ D. Albuterol
  - E. Beclomethasone

30. The therapeutic effect of cromolyn in a patient with bronchial asthma is due primarily to the drug's action on

- E
- A. Muscarinic receptors
  - B. Histamine H<sub>1</sub> receptors
  - C. Beta-1 adrenergic receptors
  - D. Beta-2 adrenergic receptors
  - ☒ E. Mast cell membranes

31. Which of the following agents is an endogenous ligand for cannabinoid receptors?

- D
- A. Dronabinol
  - B. Beta-endorphin
  - C. Met-enkephalin
  - ☒ D. Anandamide
  - E. Dynorphin

32. Successful detoxification of heroin addicts has been accomplished with all of the following drugs **EXCEPT**:

- C
- ~~A.~~ Methadone
  - ~~B.~~ Buprenorphine
  - ☒ C. Pentazocine
  - D. Levomethadyl acetate
  - E. Clonidine

33. Which of the following statements about drugs affecting histamine is true?

- B
- ~~A.~~ Cimetidine is useful for relief of seasonal allergies
  - ☒ B. Epinephrine is a physiologic antagonist of histamine
  - C. Ranitidine blocks H<sub>1</sub> receptors
  - ~~D.~~ Loratadine induces more sedation than first-generation antihistaminics
  - E. Inhibition of Na-K-ATPase

34. Many antihistamines (H<sub>1</sub> blockers) have additional non-histamine receptor-related effects; these are likely to include all the following **EXCEPT**:

- D
- A. Anticholinergic effects
  - ~~B.~~ Local anesthetic effects
  - ~~C.~~ Sedation
  - ☒ D. Antidepressant activity
  - ~~E.~~ Anti-motion sickness effect



35. Alcohol ingestion is associated with all of the following **EXCEPT**:

E

- A. Ataxia and slurred speech
- B. Tolerance and physical dependence
- C. Cutaneous vasodilation
- D. Increased fat production in the liver
- ☒ E. Stimulation of antidiuretic hormone

36. Which of the following agents would be most useful in treating anemia resulting from renal failure?

A

- ☒ A. Erythropoietin
- B. Folic acid
- C. Iron
- D. Vitamin B6
- E. Vitamin B12

37. Which of the following antiarrhythmic drugs is orally active, blocks sodium channels and has minimal effects on the EKG?

C

- ☒ A. Lidocaine <sup>1b</sup>
- B. Quinidine <sup>1a</sup>
- C. Mexilitine
- D. Encainide
- E. Procainamide <sup>1a</sup>

~~38.~~ The main mechanism by which gemfibrozil lowers plasma triglycerol levels is by

C

- ~~A.~~ Binding bile acids in the gastrointestinal tract preventing absorption
- ☒ B. Inhibiting lipolysis in adipose tissue
- C. Stimulating lipoprotein lipase activity
- ~~D.~~ Increasing the number of LDL receptors on liver cells
- E. Inhibiting lipoprotein lipase activity

~~39.~~ Which of the following statements about warfarin is most correct?

B

- A. It raises the plasma level of factor IX
- ☒ B. It inhibits the synthesis of prothrombin
- C. It inhibits thrombin
- D. It binds the calcium ion cofactor needed for coagulation
- ☒ E. It inhibits platelet aggregation

40. Which of the following antianginal drugs is most likely to cause reflex tachycardia?

- E
- A. Atenolol
  - B. Diltiazem
  - C. Nadolol
  - D. Metoprolol
  - ☒ E. Isosorbide dinitrate

~~41~~ Following an overdose of amphetamine, which of the following symptoms are most likely to occur?

- B
- A. Respiratory depression, miosis, and convulsions
  - B. Hypertension, convulsions, and mydriasis
  - C. Cardiac arrhythmias, anuria, and miosis
  - ☒ D. Bradycardia and hyperthermia
  - E. Tachycardia, respiratory depression, and miosis

42. Naloxone will reverse the acute toxic effects of which of the following drugs?

- C
- A. Cocaine
  - B. Alprazolam
  - ☒ C. Fentanyl
  - D. Fluoxetine
  - E. Nitrous oxide

43. Which of the following drugs is most likely to produce an adverse drug-drug interaction with a monoamine oxidase inhibitor? MAOI

- B
- A. Codeine
  - ☒ B. Meperidine
  - C. Fentanyl
  - D. Hydromorphone
  - E. Butorphanol

44. Adverse reactions of aspirin include

- E
- A. Antiplatelet activity leading to increased clotting times
  - B. Increased serum uric acid levels
  - C. Reye's syndrome
  - D. Erosive gastritis
  - ☒ E. All of the above

45. A number of new DMARDs have recently been developed, and these have proven particularly useful for patients with various chronic inflammatory diseases. You are treating a patient who is receiving infliximab for advanced rheumatoid arthritis. Which of the following is characteristic of infliximab?

A

- ☒ A. Is a chimeric humanized monoclonal antibody that binds to tumor necrosis factor-alpha with high affinity
- B. Is a recombinant fusion protein that consists of two soluble IL-2 receptor moieties linked to the Fc portion of human IgG
- C. Is a selective inhibitor of purine and pyrimidine synthesis
- D. Is a folic acid derivative which blocks tumor necrosis factor alpha production
- E. Is an inhibitor of DNA, collagen, and mucopolysaccharide synthesis

46. All of the following are paired with one of their adverse effects **EXCEPT**:

E

- A. High doses of furosemide – ototoxicity
- ~~B. Prolonged thiazide therapy – increased plasma cholesterol~~
- C. Spironolactone – inhibits androgenic action of testosterone
- ☒ D. Ethacrynic acid – metabolic alkalosis
- ~~E. Acetazolamide – hyperkalemia~~

47. The major reason for adding triamterene to a patient's daily hydrochlorothiazide therapy is to reduce the excretion of

D

- A. Bicarbonate
- B. Calcium
- C. Chloride
- ☒ D. Potassium
- E. Sodium

48. Which of the following drugs is an adjunct in antitussive therapy, and can be lifesaving in cases of acetaminophen toxicity?

D

- A. Potassium iodide
- B. Ipecac
- C. Terpin hydrate
- ☒ D. Acetylcysteine
- E. Guaifenesin



49.

Which of the following drugs prevents leukotriene synthesis by inhibiting 5-lipoxygenase, and is thus useful in the chronic treatment of bronchial asthma?

- A. Aminophylline
- B. Formoterol
- C. Montelukast
- ☒ D. Zafirlukast
- E. Zileuton

50.

The typical withdrawal syndrome in an individual physically dependent on heroin includes all of the following symptoms **EXCEPT**:

- A. Vomiting
- B. Gooseflesh
- C. Mydriasis
- D. Constipation
- ☒ E. Runny nose

END OF EXAM