

## DENTAL PHARMACOLOGY 2005 EXAM III

April 7, 2005

- Diuretics such as furosemide are used to treat congestive heart failure because they
  - A increase pulmonary congestion
  - -48.7 decrease plasma volume
    - C. display an "afterload" effect
    - D increase oxygen demand,
- Which effect BEST describes the mechanism of action of digoxin, a digitalis divcoside used in treatment of congestive heart failure?

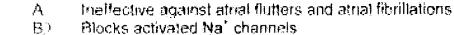


Decrease systolic force of contraction

Activates Na\*-K\* exchange in cardiac muscle

Decreases the influx of Ca24

- Increases cardiac output
- Angiotensin converting enzyme (ACE) inhibitors such as Captopril are effective in the treatment of congestive heart failure because they are
  - → A ) afferload reducing agents
    - B preload reducing agents
    - C direct vasoconstrictors
    - D direct vasodilators.
    - E. effective in increasing sodium and water retention
- 4. Which of the following is a β-adrenergic antagonist (β-blocker) used in the treatment of congestive heart failure?
  - A Lidocaine
  - → B) Propranolat
    - C Verapamil
    - D Enalapril
    - E Digoxin
- 5 Which of the following reasons **BEST** explains why lidocaine can be used to treat arrhythmias?



C Increases conduction velocity

Increases phase 4 depolarization

Blocks closed K\* channels

Which of the following statements regarding class III anti-arrhythmia drugs such as Amiodarone is CORRECT?



May display toxicity to thyroid and lungs

Can behave as a partial (1-adrenergic antagonist ((1-blocker)

Attenuate the action potential (phase 0 depolarization) \_ no effect on phase 0

Block Na\* channels to increase repolarization currents

7. Which of the following drugs is a Ca<sup>2+</sup>-channel blocker used to treat arrhythmias?



Lidocaine

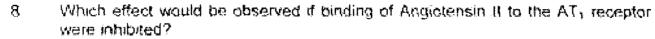
Flecainide



Pindolol

Diltiazem

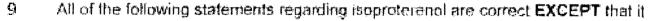
Midazolam





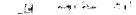
Decreased vasoconstriction

- B. Increased blood pressure
- C Increased Na<sup>3</sup>/H<sub>2</sub>O retention
- D Increased afterload





- binds with poor affinity to #-adrenergic receptors.
  - B produces peripheral vasodilation.
  - C. is a good bronchodilator
  - D. Increases cardiac output.



10 The Ca<sup>21</sup> blocker nifedipine reduces myocardial ischemia/angina by which of the following mechanisms?





Reducing activation of m-adrenergic receptors

Decreasing blood pressure and dilating coronary arteries

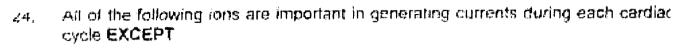
- GZ Dilating coronary afteries and increasing myocardial wall tension
- D Enhancing growth of collateral vessels

## 11 Spironolactorie is effective in the treatment of hypertension because it

- A behaves as a (Ladrenergic antagonist (S-blocker)
- B, blocks Ca<sup>2</sup> channels.
- Dlocks aldosterone effects on the kidney
  - D blocks acetylcholine binding

12.	Losartan $^{TM}$ or Irbesartan $^{TM}$ administration reduces blood pressure by which of the following reasons or mechanisms?			
Newson-collection of the second	A) They are highly selective angiotensin II receptor antagonists.  B They are both potent angiotensin-converting enzyme (ACE) inhibitors.  C They are both Ca <sup>2+</sup> -channel blockers  D They both increase the production of aldosterane			
13	Niacin at high doses can be used as an antihyperlipidemic agent because it			
	<ul> <li>mhrbits HMG-CoA reductase</li> <li>acts to inhibit transcription of proteins involved in fatty acid metabolism.</li> <li>inhibits lipolysis in adipose tissue.</li> <li>removes bite acids from the gastrointestinal tract</li> <li>directly inhibits cholesterol uptake by the liver</li> </ul>			
14	Status like Mevacor <sup>TM</sup> and Lipitor <sup>TM</sup> are antihyperlipidemic agents because they			
	inhibit HMG-CoA reductase  B act to inhibit transcription of proteins involved in fatty acid metabolism.  C inhibit lipolysis in adipose tissue.  D. remove bile acids from the gastrointestinal tract.  E directly inhibit cholesterol uptake by the liver.			
15.	Which of the following drugs, used as an anti-anginal agent, must be administered sublingually?			
	A Captopril B Furosemide C Isosorbide dinitrate D) Nitroglycerin E Atropine			
16	Which of the following drugs used in the treatment of cardiovascular disease would be contraindicated for someone undergoing major oral surgery?			
	A. Nitroglycerin B. Captopril C. Aspirin D. Furosemide E. Propranolol			
17	Which of the following drugs is used to prevent deep valuathrombasis?			
	A Atropine B Aspirin C' Heparin D Vitamin K E Streptokinase			

18		lerisin converting enzyme inhibitors are used clinically for all of the inglindications EXCEPT	
-4	A. B. C. D E	treatment of cardiac systolic dysfunction.  therapy of normal-renin associated hypertension.  management of hypokalemia treatment of acute coronary thrombosis and pulmonary edema. prevention of cardiac remodeling in hypertensive states	
19	Nearly two-thirds of filtered sodium is reabsorbed in which segment of the nephron?		
	A B C D E	The proximal renal tubules The thin descending limb of the loop of Henle The thick ascending limb of the loop of Henle The distal convoluted tubules The collecting ducts	
20	Which	portion of the nephron utilizes the greatest amounts of ATP?	
	A ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	The proximal renal tubules The thin descending limb of the loop of Henle The thick ascending limb of the loop of Henle The distal convoluted tubules The collecting ducts	
21	Which	of the following combinations of diaretic drugs is LEAST effective?	
	A B C T	Burnetanide and hydrochlorothiazide Furosemide and triamterene Hydrochlorothiazide and amiloride Spironolactone and triamterene Spironolactone and furosemide	
22.	Furose	amide can produce all of the following effects EXCEPT	
<b></b>	A B CO	hypokalemia in acute renat failure toxicity similar to that of sulfonamides in enhanced renin secretion. In metabolic alkalosis.	
23.	All of t	he following diuretics act at the lumenal side of renal tubules EXCEPT	
<b>,</b> -	A B O D	hydrochlorothiazide triamterene ethacrynic acid. bumetanide. spironofactorie	





A. Ca<sup>21</sup>
B. K<sup>1</sup>
Mg<sup>2</sup>
D. Na<sup>1</sup>

25. Which of the following receptors is important for sensing short term changes in blood pressure?



B<sub>1</sub>-Adrenergic receptors

B) Baroreceptors

Chemoreceptors

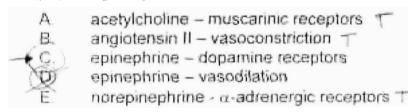
D Dopamine receptors

E Nicotinic cholinergic receptors

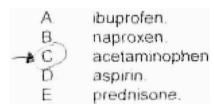
- 26. Which tissue is responsible for the pacemaker potentials that control contraction of the heart?
  - A Atrioventricular node.
  - B Bundle of His
  - C Purkinje fibers
  - Sinoatrial node

F Ventricular myocardium

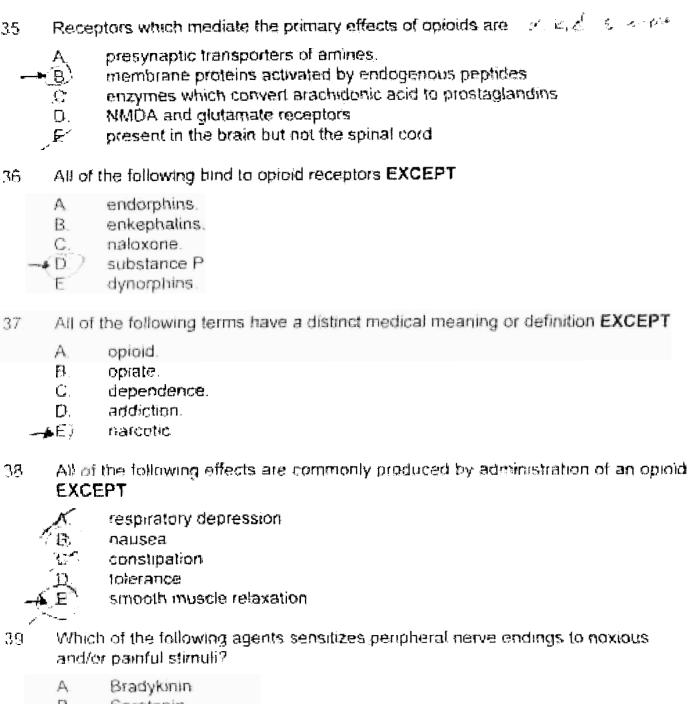
27 All of the following pairs of agents and actions or agents and receptors occur physiologically in normal individuals **EXCEPT** 



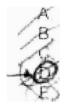
23 All of the following drugs are antiinflammatory EXCEPT.



<u> ಕ್ರವ</u>	postoperative bleeding because aspirin inhibits				
	A) B. C D E	synthesis of thromboxane and prevents platelet aggregation synthesis of prostacyclin and prevents platelet disaggregation synthesis of prostaglandins and prevents production of blood platelets thrombin and prevents formation of the fibrin network intestinal absorption of vitamin K and prevents synthesis of blood clotting factors.			
30.	Which of the following pharmacologic actions is <b>NOT</b> prod- prostaglandins?				
∳	A B C D. E	Pyrexia Uterine contraction Increased gastric acid secretion Increased capillary permeability Increased sensitivity to pain upon intradermal injection			
31	Which of the following conditions or effects does <b>NOT</b> result from prolonged treatment with corticosteroids?				
	ARRIVA	Gastric ulcer Osteoporosis Hyperglycemia Skeletal muscle atrophy Redistribution of body fat			
32	All of the following agents useful for treatment of rheumatoid arthritis can be used simultaneously with anakinra EXCEPT				
-		aspirin celecoxib. calcino infliximab. methotrexate. prednisone.			
33.	The m	lost prominent acute toxic effect associated with acetaminophen use is hemorrhage.			
-7	B C D E	renal necrosis hepatic necrosis. gastric ulceration. respiratory alkalosis.			
34.	Which	of the following drugs is an effective antitussive?			
<b>-</b> ₹	ABCDE	Ibuprofen Dextromethorphan Guaifenesin Aspirin Acetaminophen			



- A Bradykinin
  B. Serotonin
  C Histamine (itching),
  D H\* (acid)
  Prostaglandins
- 40 All of the following effects can be produced by administration of an opioid EXCEPT



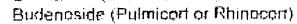
suppression of the cough reflex (antitussive).
elevation of mood.
constriction of pupils.
inhibition of vomiting (antiemetic).
stimulation of release of histamine from mast cells.

- Which of the following agents is LEAST likely to produce either physical 41 dependence or addiction?
  - A Codeine
  - B Morphine
  - C Oxycodone
  - O. Hydrocodone
  - (E) Tramadol
  - A 57 year old person receiving propranolol (β-blocker) for hypertension presents 42. with an acute allergic asthma attack. Which of the following treatments is specifically contraindicated?



tpratropium bromide (anti-cholinergic).

Locatadine (anti-histamine)





Albuterol

None of the above

Which of the following classes of bronchodilators is MOST effective in chronic 43 obstructive pulmonary disease (CDPD)?



Anticholinergics

B. B-Adrenergic agonists

B-Adrenergic receptor antagonists

Corticosteroids Di

Methylxanthines

- Branchoconstriction in chronic obstructive pulmonary disease (COPD) due to 44 epithelial damage occurs by what mechanism?
  - Loss of endogenous plagonist release leading to increased smooth A muscle contraction.
  - Activation of exposed sensory nerve libers leading to acetylcholine **--**•Ɓ ) release and cholinergic bronchoconstriction.
    - C. Increased inflammatory mediator release leading to smooth muscle oxidative damage
    - [] Loss of epithelial derived acetylcholine release leading to increased branchoconstriction.
    - None of the above
- Anti-leukotrienes and antihistamines are both used as treatments for allergen-45 induced asthma. These compounds are best used



prophylactically to prevent allergen-mediated responses.

in response to an acute asthmatic attack due to their fast action.

- in combination with anti-cholinergic agents. C.
- D. in combination with (3-adrenergic antagonists (3-blockers).

- 46. Which statement accurately describes the mechanisms of action Оf corticosteroids? Fast-acting anti-inflammatory due to increased calcium release stimulated Α in inflammatory cells, especially Mast cells Bind selectively to epithelial cells leading to endogenous 8-agonist release 13 Slow-acting agents that influence protein expression by binding to nuclear receptors which then bind directly to specific DNA sequences. Fast-acting agents that increase chloride secretion across epithelial cells [] leading to improved airway clearance E East-acting agents that bind to membrane receptors and elevate Ca<sup>22</sup> Which of the following drugs has an antihypertensive effect at low doses and an 47 antidiuretic effect at high doses? Bumetanide Leca Δ, B Lisinopril 1754 Spironolactone C Hydrochlorothiazide D Losartan 48 Leukotrienes are derived from arachidonic acid and are potent mediators of Which of the following therapies would NOT allergic asthmatic responses ameliorate leukotriene effects? Increased expression lipocortin-1 after corticosteroid treatment Inhibition of cyclooxygenase activity by aspirin or ibuprofen leading to reduced prostaglandin synthesis. Inhibition of 5-lipoxygenase activity leading to reduced 5-HPETE formation. Ø Receptor blockade using "lukast" drugs 13 49 Which of the following is a concern with prolonged, repeated use of \$\text{\$\text{\$\general}\$-receptor.}\$ agonists for the treatment of acute asthmatic exacerbations? A negative regulation of corticosteroid receptor function resulting in reduced steroid effectiveness B Secondary release of acetylcholine leading to cholinergic airway contraction Increased mast cell recruitment leading to more severe allergic responses C.
  - D ||-Receptor desensitization via ||-receptor kinase (||)ARK) activation None of the above
  - 50 In the electrocardiogram, the QRS complex corresponds to approximately what part of the action potential?
  - 11 Phase 0 to 1 Phase 1 to 2 B, Phase 2 to 3 T) Phase 3 to 4 E Phase 4 to 0

## **BONUS QUESTIONS**

While effective in the treatment of congestive heart failure, B-adrenergic 51 antagonists (()-blockers) can also used to treat arrhythmias because they Α are excreted solely through the kidneys. have no effect on the A-V node 13 reduce ventricular response to atrial fibrillations. **-** C) have no effect on mortality. Cholestipol<sup>™</sup> is used as an antihyperlipidemic agent because it 52 inhibits HMG-CoA reductase В acts to inhibit transcription of proteins involved in fatty acid metabolism. inhibits lipolysis in adipose tissue removes bile acids from the pastrointestinal tract . 0 日等 directly inhibits cholesterol uptake by the liver 53 Which of the following drugs would likely be used to treat sinus tachycardia? **Atropine** Α. В Isoproterenol >0 Propranolol  $\mathbf{D}_{\cdot}$ Lidocaine Verapamil 1,4 All of the following statements describe a known effect of corposteroid treatment. **EXCEPT** M decreased recruitment of eosinophils. В increased expression of N-receptors on smooth muscle cells.  $\mathbb{R}^{2^{n}}$ decreased cytokine expression from T-lymphocytes and macrophages. reduced mucous secretion from glands  $\Box$ increased Mast cell recruitment and histamine release 55 Which of the following sequences correctly describes the order of the conduction. pathway for the cardiac action potential? AV node - SA node - internodal pathways - Parkinja fibers - ventricular myocardium AV node - SA node - Purkinje fibers - internodal pathways - ventricular myocardium Internodal pathways - SA node - Purkinje fibers - AV node - ventricular myocardium Purkinje fibers – SA node – internodal pathways – AV node – ventricular

SA node - AV node - Internodal pathways - Purkinje fibers - ventricular

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