



KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF PHARMACY

PPB 520: PHARMACOLOGY VI

2ND TRIMESTER 2020/2021

TIME: 3 HOURS

INSTRUCTIONS:

- The paper consists of **THREE** sections; **SECTIONS: A, B and C**
 - Answer each section on separate booklets. Label each booklet **CLEARLY**
 - Answer **ALL** questions
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SECTION A

PPB 521: DRUG ALLERGY AND ADVERSE DRUG REACTIONS

1. Which one of the following statements best describes an adverse effect of a drug?
 - A. An unexpected abnormal reaction to a drug
 - B. Indirect consequences or effects of use of a drug
 - C. Any undesirable or unintended consequence of drug administration
 - D. Any untoward occurrence that may present during treatment with a drug, but which does not necessarily have a causal relation to the treatment
 - E. Appearance of characteristic toxic effects of a drug in an individual at therapeutic doses
2. Causality assessment of a suspected adverse drug reaction involves all of the following **EXCEPT....**
 - A. Assessing whether a drug is responsible for a suspected adverse drug reaction
 - B. Establishing causal link between an adverse drug reaction and suspected drug
 - C. Establishing severity of a suspected adverse drug reaction
 - D. Assessment of adverse drug reaction based on previous knowledge and experience
 - E. Assigning a causality category to a suspected adverse drug reaction

3. The following are type II drug hypersensitivity reactions **EXCEPT**....
- A. StevensJohnson's syndrome due to sulphonamides
 - B. thrombocytopenic purpura due to quinidine
 - C. agranulocytosis due to quinine
 - D. haemolytic anaemia from methyldopa
 - E. systemic lupus erythematosus following hydralazine
4. Which one of the following is a type IV drug hypersensitivity reaction?
- A. Skin hyperpigmentation following use of tetracyclines
 - B. Contact dermatitis associated with griseofulvin
 - C. Angiodema associated with enalapril
 - D. Serum sickness associated with filgrastim infusion
 - E. Heparin induced thrombocytopenia
5. Which one of the following is a clinical consequence of a pharmacokinetic drug interaction that reduces the extent of absorption of a drug?
- A. Treatment failure
 - B. Reduced drug metabolism
 - C. Reduced drug elimination
 - D. Occurrence of toxic effects
 - E. Drug accumulation
6. Which one of the following is a clinical consequence of enzyme inhibition of a drug metabolizing enzyme?
- A. Increased drug elimination
 - B. Treatment failure
 - C. Sub-therapeutic drug levels
 - D. Occurrence of toxic effects
 - E. Drug accumulation

7. Which one is an idiosyncratic reaction due to the genotype of a patient's drug metabolizing enzyme?
- A. Prolonged apnoea with administration of succinyl choline
 - B. Aplastic anaemia with use of chloramphenicol
 - C. Haemolytic anaemia with use of primaquine
 - D. Myopathy with use of simvastatin
 - E. Stevens Johnson syndrome with use of carbamazepine
8. Which developmental stage in a foetus is most susceptible to teratogenesis?
- A. 1st - 14th day of gestation
 - B. 3rd - 8th week of gestation
 - C. 1st week of gestation
 - D. 9th - 20th week of gestation
 - E. 30th - 40th week of gestation
9. Which statement best describes a drug that is classified as risk category B as per the FDA risk category of drugs during pregnancy?
- A. Studies in animals or humans have demonstrated foetal abnormalities & potential risk clearly outweighs possible benefit
 - B. Adequate studies in pregnant women have failed to demonstrate a risk to the foetus
 - C. Adequate human studies are lacking, but animal studies have failed to demonstrate a risk to the foetus
 - D. No adequate studies in pregnant women & animal studies are lacking or have shown an adverse effect on foetus, but potential benefit may warrant use of the drug in pregnant women despite potential risk
 - E. There is evidence of human foetal risk, but the potential benefits from use of the drug may be acceptable despite the potential risk
10. Warfarin use in pregnancy may lead to.
- A. Foetal growth retardation
 - B. Neonatal deafness
 - C. Mental retardation
 - D. Cleft palate
 - E. Phocomelia

11. Outline the **six** principal teratogenic mechanisms that lead to birth defects. (3 marks)
12. Highlight **four** factors that determine the capacity of a teratogen to produce birth defects.
(2 marks)
13. Outline **four** factors that make a patient susceptible to developing an adverse drug reaction.
(2 marks)
14. Describe **four** features of a type B adverse drug reaction.
(2 marks)
15. Explain the basis of the Extended Rawlins – Thompson Classification system of adverse drug reactions.
(3 marks)
16. Describe **four** clinical features of type III drug hypersensitivity reactions. (2 marks)
17. Explain **four** mechanisms by which a drug may affect absorption of another drug.
(2 marks)
18. Describe **four** mechanisms involved in pharmacodynamic drug interactions. (4 marks)
19. Discuss type I drug hypersensitivity reactions under the following headings:
 - a. Mechanism of occurrence. (6 marks)
 - b. Four drugs used in management. (2 marks)
 - c. Two examples and the associated drug. (2 marks)

SECTION B

PPB 522 CARDIOVASCULAR SYSTEM

1. The class of antihypertensive drugs that have postural hypotension as a common adverse effect is...
 - A. alpha-receptor blockers
 - B. arteriolar dilators
 - C. loop diuretics
 - D. calcium channel blockers
 - E. angiotensin receptor blocker
2. Which statement concerning minoxidil is **CORRECT**?
 - A. Mechanism of action is via L-type calcium channels
 - B. It cannot be administered orally due to first pass effect
 - C. It dilates both arterioles and veins
 - D. It is used in combination with a β -blocker and loop diuretic
 - E. It's rapidly metabolized to liberate cyanide

3. Regarding the pharmacokinetics of calcium channel blockers, which statement is FALSE?
- A. They are excreted through the kidney
 - B. Protein binding approximate 90%
 - C. They exhibit significant first pass metabolism
 - D. They are orally administered
 - E. Hepatic cirrhosis does not alter their half-life
4. A woman with hyperlipidemia and frequent migraine headaches develops exertional angina. Which of the following drugs is relatively contraindicated because of her migraines?
- A. Amlodipine
 - B. Diltiazem
 - C. Metoprolol
 - D. Nitroglycerin
 - E. Verapamil
5. A drug that is used in severe hypertensive emergency, is short-acting, acts via a G protein-coupled receptor, and must be given by intravenous infusion is
- A. aliskiren
 - B. fenoldopam
 - C. hydralazine
 - D. metoprolol
 - E. nitroprusside
6. Clinically, the angiotensin receptor blockers share the following features of angiotensin converting enzyme inhibitors EXCEPT.....
- A. antihypertensive efficacy
 - B. reversal of left ventricular hypertrophy
 - C. lack of effect on carbohydrate tolerance
 - D. potential to induce cough in susceptible individuals
 - E. antagonizing sympathetic stimulation

7. The drug that reduces blood pressure by acting on vasomotor centers in the Central Nervous System (CNS) is
- A. sodium nitroprusside
 - B. clonidine
 - C. lisinopril
 - D. doxazosin
 - E. isradipine
8. The drug that interacts with nitrate to cause severe hypotension through its inhibition of cGMP metabolism is
- A. milrinone
 - B. Amlodipine
 - C. ranolazine
 - D. sildenafil
 - E. reserpine
9. The cardiovascular agent which has a very short duration of action and acts by releasing nitric oxide is
- A. guanabenz
 - B. aliskiren
 - C. mexiletine
 - D. hydralazine
 - E. nitroprusside
10. Which of the following drugs is **MOST EFFECTIVE** in converting a patient with atrial fibrillation into sinus rhythm?
- A. Digoxin
 - B. Amiodarone
 - C. Atenolol
 - D. Lidocaine
 - E. Diltiazem

11. The drug used to alleviate the compensatory increases in heart rate and renin release that occur in heart failure is
- A. Milrinone.
 - B. atenolol
 - C. chlorthalidone
 - D. eplerenone
 - E. losartan
12. Which one of the following pharmacodynamic properties of verapamil is **NOT** **ACCURATE**?
- A. Blocking L-type calcium channels
 - B. Decreasing threshold potential
 - C. Relaxing coronary artery smooth muscle
 - D. Decreases cardiac contractility
 - E. Relaxation of vascular smooth muscles
13. Which one of the following statements is **FALSE** regarding management of stable angina?
- A. The main goal is coronary dilation
 - B. Labetalol decreases oxygen demand
 - C. Nicardipine reduced nitroglycerine requirements
 - D. Organic nitrate increases levels of cGMP
 - E. Hydralazine acts via calcium calmodulin complex
14. The class of drugs that is contraindicated in management of hypertension in a patient with bronchial asthma is
- A. loop diuretics
 - B. beta blockers
 - C. alpha two agonists
 - D. dihydropyridines
 - E. nitrates

15. Which of the following ion channels would be affected by antiarrhythmic agent that affects phase 2 of the myocardial action potential?

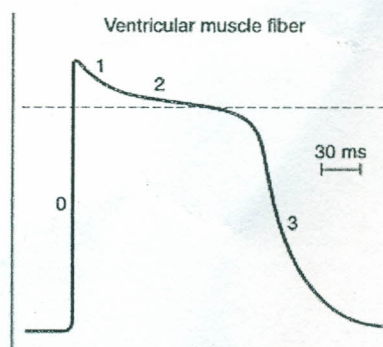


Figure 1. Action potential of ventricular fibers

- A. Ligand-gated Ca^{2+} channels opening
 - B. Ligand-gated Na^{+} channels opening
 - C. Voltage-gated Ca^{2+} channels opening
 - D. Voltage-gated Na^{+} channels closing
 - E. Voltage-gated Na^{+} channels opening
16. Which one of the following is contraindication for irbesartan?
- A. Left ventricular failure
 - B. Asthma
 - C. unilateral renal artery stenosis
 - D. Pregnancy
 - E. Diabetic nephropathy
17. Regarding calcium channels blockers, which statement is **TRUE**?
- A. Drug examples include diltiazem, sotalol and idazoxan
 - B. They are excreted in the urine unchanged
 - C. Dihydropyridines induce reflex tachycardia
 - D. Felodipine has greater coronary vasodilation than verapamil
 - E. Felodipine is highly lipophilic hence crosses brain barrier.

SECTION C

PPB 523: RESPIRATORY SYSTEM DISORDERS

1. All of the following are selective β_2 -agonist **EXCEPT**.....
 - A. isoprenaline
 - B. salbutamol
 - C. terbutaline
 - D. formoterol
 - E. bambuterol

2. All of the following combinations of drug and their mechanism of action is correct **EXCEPT**.....
 - A. salbutamol: stimulation of β_2 receptor causing bronchodilation
 - B. sodium cromoglicate: mast cell stabilization
 - C. zafirlukast: leukotriene modulators
 - D. theophylline: non-selective β_2 receptor stimulation causing bronchodilation
 - E. fluticasone; anti-inflammatory

3. Which of the following statement about Salmeterol is **NOT TRUE**?
 - A. It acts by relaxing muscles in the airways to improve breathing
 - B. It is a short-acting selective β_2 agonist
 - C. Inhalation is used to prevent asthma attacks
 - D. Inhalation is used to treat COPD including emphysema and chronic bronchitis.
 - E. It is a long-acting selective β_2 agonist

4. Which of the following inhibits acetylcholine-mediated bronchospasm?
 - A. Theophylline
 - B. Ephedrine
 - C. Ipratropium
 - D. Salmeterol
 - E. Roflimust

5. The following statements about the use of glucocorticoids in asthma are true

EXCEPT...

- A. reduces bronchial inflammation and hyperactivity to stimuli
- B. have delayed onset of action
- C. given as prophylactic medications, used alone or combined with β -agonists
- D. they are bronchodilators
- E. they have anti-inflammatory action

6. Which one of the following is **NOT** a side effect due to systemic corticosteroids?

- A. Adrenal suppression
- B. Fluid retention
- C. Hyperglycemia
- D. Sleep disorders
- E. Hypertension

7. Which one of the following is the drug of choice in the treatment of productive cough?

- A. Dextromethorphan
- B. Pholcodine
- C. Bromhexine
- D. Noscapine
- E. Ephedrine

8. Which one of the following pharmacologic agents antagonizes adenosine?

- A. Theophylline
- B. Glucocorticoids
- C. Cromolyn sodium
- D. Terbutaline
- E. Roflimust

9. Beta-2 adrenergic agonists help treat asthma because they:

- A. stop the inflammation that is part of asthma
- B. kill bacteria
- C. help to constrict the airways
- D. help to expand the airways
- E. expand the lungs

10. Which one of the following drugs is a respiratory stimulant?

- A. Hydrocodone
- B. Atropine
- C. Aminophylline
- D. Doxapram
- E. Salmeterol

11. Theophylline overdose causes:

- A. bradycardia
- B. seizures
- C. drowsiness
- D. bronchospasm
- E. persistent cough

12. Montelukast acts via...

- A. competitive antagonism of leukotriene receptors
- B. inhibition of alpha receptor
- C. beta receptor agonism
- D. non-competitive inhibition of leukotriene synthesis
- E. competitive muscarinic receptor blockade

13. Regarding glucocorticoids use in the management of asthma:

- a) Describe their mechanism of action. (5 marks)
- b) Discuss TWO pharmacological actions. (4 marks)
- c) Outline THREE adverse reactions. (3 marks)

13. Discuss the clinical manifestations of the following respiratory disorders

- a) Acute respiratory distress syndrome (4 marks)
- b) Pulmonary Fibrosis (6 marks)
- c) Chronic obstructive pulmonary disease. (6 marks)