

Pharmacology MCQs

PEW June 2001

1 The following are true for adrenaline EXCEPT:

- a) it acts via G-proteins
- b) alpha receptor stimulation results in decreased cAMP production
- c) it may be administered via inhalation, orally and parentally
- d) it has no active metabolites
- e) in cardiac arrest it facilitates CPR via peripheral vasoconstriction

2 Heparin:

- a) inhibits clotting by decreasing anti-thrombin III effects
- b) oral bioavailability is 20-30%
- c) is low plasma protein bound
- d) molecular weight ranges from 3,000 – 60,000
- e) binds to anti-thrombin III causing a conformational change

3 Volume of distribution:

- a) is always a real volume
- b) $\frac{\text{amount of drug in plasma}}{\text{concentration in body}}$
- c) $\frac{\text{concentration of drug in plasma}}{\text{amount of drug in blood}}$
- d) $\frac{\text{amount of drug in body}}{\text{concentration of drug in plasma}}$
- e) $\frac{\text{AUC}}{\text{dose}}$

4 Aspirin:

- a) is hydrolysed to acetone and salicylate
- b) exhibits first order kinetics with elimination in low doses
- c) is mostly conjugated by the liver and excreted in the bile
- d) reversibly blocks the cyclooxygenase enzyme
- e) causes an immediate doubling of bleeding time

5 Amiodarone:

- a) effects Na^+ , K^+ channels but not Ca^{2+} channels
- b) has antianginal effects
- c) has a short half life
- d) increases peripheral resistance
- e) has little effect on the lung

6 Tricyclic antidepressants:

- a) have a low volume of distribution
- b) are useful in urinary retention and chronic pain
- c) can prolong QT interval
- d) block the enzyme which degrades amine neurotransmitters
- e) is useful in severe depression with strong suicidal ideation

7 Regarding diazepam:

- a) it has no active metabolites
- b) activated charcoal is useful in overdose
- c) it undergoes extensive enterohepatic recirculation
- d) it is a GABA antagonist via the benzodiazepine receptors
- e) It has no spinal inhibitory action

8 Atropine:

- a) can cause bronchodilation
- b) produces miosis
- c) is not lipid-soluble
- d) blocks reuptake of ACH
- e) causes an increase in salivary gland secretions

9 All are true about penicillins EXCEPT:

- a) most penicillins only cross blood-brain barrier when the meninges are inflamed
- b) penicillins don't require adjustment in renal failure
- c) penicillins inhibit cross linkage of peptidoglycans in cell wall
- d) piperacillin is a penicillin active against pseudomonas
- e) only about 5-10% of people with a past history of penicillin allergy have a reaction on re-exposure

10 Which of the following receptor-ligand pathway is TRUE:

- a) insulin and G-protein receptor
- b) mineralocorticoid and tyrosine kinase receptor
- c) vitamin D and intracellular receptor
- d) adrenaline and ligand gated channel receptor
- e) platelet derived growth factor and cytokine receptor

11 GTN has its major effect on effort angina by:

- a) reducing coronary vasospasm
- b) reduction in renin-ang II system effect
- c) reducing afterload and preload
- d) coronary vasodilation
- e) systemic vasoconstriction

12 Warfarin:

- a) is 90% bioavailable
- b) inactivates Vit K
- c) can cause venous thrombosis
- d) loading should be initiated with 0.5mg / day
- e) effect is ameliorated by metronidazole via a bactericidal affect

13 Most β blockers:

- a) have half lives of 3-10 hours
- b) have a small volume of distribution
- c) have poor oral bioavailability
- d) are highly lipid soluble and hence cross the blood-brain barrier
- e) are rarely excreted unchanged

14 Age associated changes in pharmacokinetics include:

- a) a reduction in creatinine clearance in two thirds of the population
- b) a decrease in body fat
- c) an increase in body water
- d) a greater reduction in conjugation compared with oxidation
- e) a decreased absorption related to age alone

15 The following drug may be used safely in pregnancy:

- a) carbamazepine
- b) digoxin
- c) streptomycin
- d) methotrexate
- e) propylthiouracil

16 Regarding NSAIDS:

- a) at high doses aspirin demonstrates first order kinetics
- b) aspirin is a reversible inhibitor of cyclooxygenase
- c) aspirin at a dose of $\leq 2\text{g/day}$ reduces uric acid levels
- d) all NSAIDs can be found in synovial fluid after repeated dosing
- e) use of ibuprofen and aspirin together increases the anti-inflammatory effect

17 Regarding biotransformation, which of the following is true:

- a) ethanol enhances methanol metabolism
- b) grapefruit juice inhibits cyclosporin metabolism
- c) phenytoin inhibits theophylline metabolism
- d) rifampicin inhibits oral contraceptives metabolism
- e) griseofulvin inhibits warfarin metabolism

18 Bioavailability is:

- a) less than 100% by any route
- b) is the percentage of a drug formulation that is absorbed
- c) is not affected by first pass metabolism
- d) is close to 80% for orally administered verapamil
- e) is equivalent to absorption minus the extraction rate for an orally administered drug

19 Dobutamine:

- a) has no arrhythmogenic effect
- b) decreases myocardial oxygen consumption
- c) is a non selective β agonist
- d) predominantly affects D_2 receptors in the central nervous system
- e) may be used in heart failure

20 Which of the following antihypertensives act on the vasomotor centre:

- a) prazosin
- b) methyldopa
- c) hydralazine
- d) reserpine
- e) losartan

21 Haloperidol:

- a) is particularly prone to producing hypotensive side-effects
- b) is particularly prone to producing extrapyramidal side-effects
- c) is particularly prone to producing arrhythmias
- d) is particularly prone to producing anti-muscarinic side-effects
- e) is particularly prone to producing a toxic confusional state

22 Effects of β blockers include:

- a) stimulation of aqueous humour production
- b) inhibition of bronchial smooth muscle spasm
- c) stimulation of lipolysis via the sympathetic nervous system
- d) stimulation of the release of renin
- e) inhibition of glycogenolysis in the liver

23 Regarding phenytoin, all the following are true EXCEPT:

- a) oral bioavailability is variable
- b) binds poorly with plasma proteins
- c) metabolism is enhanced in presence of inducers of liver metabolism
- d) elimination kinetics shift from first order to zero order at moderate to high dose
- e) half life varies from 12-36 hours

24 Regarding inhaled anaesthetics:

- a) nitrous oxide has a relatively low minimum alveolar concentration
- b) halogenated agents have a lower brain : blood partition coefficient
- c) they reduce mean arterial pressure in direct proportion to their alveolar concentration
- d) nitrous oxide causes a decrease in tidal volume and an increase in respiratory rate
- e) they decrease the metabolic rate in the brain by decreasing cerebral blood flow

25 Regarding glucocorticoids:

- a) The major glucocorticoid in humans is cortisol
- b) A normal adult male secretes 100mg of cortisol each day
- c) Feedback suppression of pituitary ACTH occurs within hours
- d) Absence of cortisol increases the response of vascular and smooth muscle tone to catecholamines
- e) Inhibition of leucocyte and tissue macrophages is not an action of glucocorticoids

26 Of the secondary messengers:

- a) compared to cAMP, cGMP is a more versatile and ubiquitous carrier of diverse messages
- b) phosphoinositides act independently of phospholipase -C
- c) upregulation of cAMP degradation is one way theophylline produces its effects
- d) cAMP's effector enzyme is adenylyl cyclase
- e) all of the above

27 Which of the following are antagonist and agonist pairs for the same receptor:

- a) butoxamine, terbutaline
- b) phenoxybenzamine, cyclopentolate
- c) pilocarpine, bethanechol
- d) oxymetazoline, dobutamine
- e) bromocriptine, pramipexole

28 Regarding calcium channel blockers:

- a) not all are active when given orally
- b) most have half lives of 8-12 hours
- c) mechanism of action is the blockage of voltage dependent L-type calcium channels
- d) they do not affect bronchiolar smooth muscle
- e) dihydropyridines typically cause bradycardia

29 Cephalosporins are:

- a) excreted in the bile
- b) excreted via the kidneys in the tubules
- c) drugs that can undergo hepatic metabolism
- d) are classified on the basis of antibacterial activity
- e) all of the above

30 With regard to non-depolarising neuromuscular blocking drugs:

- a) pancuronium is eliminated via the kidney
- b) rocuronium is an isoquinolone derivative
- c) rocuronium undergoes Hoffman elimination
- d) vecuronium is eliminated predominantly via the kidney
- e) atracurium is eliminated via plasma pseudocholinesterases

31 Regarding opioids:

- a) neonates have a blood – brain barrier for opioids
- b) at the spinal level, only the receptors contribute to analgesia
- c) the most reliable indicator of respiratory depression is a depressed response to CO₂ challenge
- d) tolerance develops with miosis
- e) people with Addison's disease have normal response to opioids

32 Which statement is false:

- a) drug A with a higher potency can have a lower efficacy than drug B
- b) drug A with a higher affinity for its drug receptors have a higher potency
- c) drug A with a lower potency must have a lower efficacy than drug B
- d) drug A with a higher potency than drug B, can still have the same efficacy
- e) none of the above

33 Local anaesthetic agents:

- a) are primarily potassium channel blockers
- b) prevent repolarisation of the membrane
- c) can be used with a vasodilator to prolong local action
- d) activity is enhanced by high extracellular K⁺ concentration
- e) activity is enhanced by high extracellular (Ca⁺⁺)

34 Drugs with no significant effect on anticoagulant therapy include:

- a) amiodarone
- b) disulfiram
- c) flucanazole
- d) benzodiazepines
- e) metronidazole

35 Regarding first pass metabolism:

- a) its effect on bioavailability is expressed as the extraction ratio where
$$ER = \frac{C_L \text{ (liver)}}{Q \text{ (liver)}}$$
- b) it affects volume of distribution
- c) it reduces the bioavailability of oral morphine to 15%
- d) the extraction ratio of phenytoin is higher
- e) it makes it impossible to attain therapeutic levels of lignocaine using oral dosage

36 With regard to oral anti-asthmatic agents:

- a) prednisone is a long acting glucocorticoid
- b) methotrexate has been shown to be beneficial in prednisone-dependent asthmatics in all studies
- c) cyclosporin's toxicity limits its use as an oral anti-asthmatic agent
- d) oral nifedipine significantly inhibits exercise-induced bronchoconstriction
- e) macrolide antibiotics show no benefit in managing asthmatics

37 Trimethoprim:

- a) activates dihydrofolic acid reductase
- b) is a weak base
- c) has limited activity in the prostate gland
- d) does not distribute into the CSF
- e) is harmless in pregnancy

38 Regarding antibiotic resistance:

- a) betalactamase production is responsible for penicillin resistance in pneumococci
- b) penicillin's inability to penetrate the organism is more common with gram -ve bacteria
- c) penicillin resistance is mainly because of alteration in the target PBPs
- d) methicillin resistance in staphylococcus is due to betalactamase production
- e) beta lactamase are identical but produced by different bacteria

39 Clearance:

- a) is the amount of drug eliminated divided by the concentration of the drug
- b) is constant for most drugs in clinical settings at therapeutic levels
- c) is very high for lithium
- d) is independent of concentration for phenytoin
- e) is inversely proportional to volume of distribution

40 Toxicity of nicotine containing products:

- a) may result in neuromuscular blockade best treated with atropine
- b) usually causes hypotension
- c) will have no effects on the foetus
- d) can be symptomatically controlled with benzodiazepines
- e) will result in several days of nausea and vomiting

41 The following are side effects of SSRI's EXCEPT:

- a) rash
- b) weight gain
- c) sexual dysfunction
- d) anxiety
- e) gastrointestinal symptoms

42 Regarding drugs used in the treatment of status epilepsy:

- a) phenytoin is useful in status for its sedating as well as anticonvulsant activity
- b) phenytoin may be diluted in both saline and dextrose
- c) the effect of diazepam is long lasting
- d) respiratory depression is a common complication of phenobarbitone
- e) administration of phenytoin should be at a minimum rate of 50mg/min

43 ACE inhibitors:

- a) decrease levels of bradykinin
- b) cause hyperkalaemia less often in patients with diabetes
- c) are contraindicated in patients on NSAIDS
- d) decrease glomerular efferent arteriolar resistance
- e) lead to decreased prostaglandin synthesis

44 Regarding active immunisation:

- a) the measles vaccine is an inactivated virus
- b) the hepatitis B vaccine is preferably given by subcutaneous injection
- c) booster doses for yellow fever are not required
- d) primary immunisation for haemophilis influenzae type B involves two doses given one month apart
- e) the meningococcal vaccine should be given to asplenic individuals

Pharmacology MCQ Answers

PEW June 2001

- 1 C Page
- 2 E Page , Katzung 7th Edition
- 3 D Page
- 4 B Page 580-81, Katzung 7th Edition
- 5 B Page 233-5, Katzung 8th Edition
- 6 C Page 493, Katzung
- 7 B Page 355-363, Katzung 7th Edition
- 8 A Page 62, Katzung 5th Edition
- 9 B Page 314-317, Katzung 5th Edition
- 10 C Page
- 11 C Page 183,4, Katzung 7th Edition
- 12 C Page 569-572, Katzung 8th Edition
- 13 A Page 144-145, Katzung 8th Edition
- 14 A Page 1036-37, Katzung 8th Edition
- 15 B Page 976, 979, Katzung 7th Edition
- 16 D Page 581-586, Katzung 7th Edition
- 17 B Page 61, Katzung 8th Edition
- 18 E Page 38-41, Katzung 7th Edition
- 19 E Page 209, Katzung 8th Edition
- 20 B Page 156, Katzung 7th Edition
- 21 B Page
- 22 E Page 146, Katzung 8th Edition
- 23 B Page 398, Basic and Clinical Pharmacology, 8th Edition
- 24 C Page 424, 426-427, Katzung 8th Edition
- 25 A Page 635-639, Katzung 7th Edition
- 26 D Page 26, Katzung 7th Edition
- 27 A Page 95, 118, 131-132, 141, 148, 468, Katzung 8th Edition
- 28 C Page 186-191, Katzung 7th Edition
- 29 E Page 317, Katzung 5th Edition
- 30 A Page 438, Katzung 7th Edition
- 31 C Page 496-513, Katzung 7th Edition
- 32 C Page 28, Katzung 7th Edition
- 33 D Page 425-433, Basic and Clinical Pharmacology, 7th Edition
- 34 D Page 555, Katzung 7th Edition
- 35 A Page 42, Katzung 7th Edition
- 36 C Page 345-6, 666, Katzung 8th Edition
- 37 B Page
- 38 B Page 729, Katzung 7th Edition
- 39 B Page 36-40, Katzung 9th Edition
- 40 D Page
- 41 B Page 493, Katzung 7th Edition
- 42 D Page 405, Katzung 7th Edition
- 43 D Page 170-171, Katzung 7th Edition
- 44 E Page 1052, Katzung 7th Edition