...partment of Pharmacology

3rd Year MBBS

MCQ's (General pharmacology) 129

Time allowed: 30mins

Max marks: 30

1. Which of the following correctly defines a receptor?
   a. A carrier that transports drug
   b. A macromolecule of a cell to which a drug binds and thereby producing its effects
   c. An enzyme involved in drug metabolism
   d. A plasma protein to which drug binds
2. All of the following terms are correctly defined EXCEPT:
   a. Affinity: The ability of a drug to bind to a receptor
   b. EC50: Concentration of a drug that produces half of Emax (maximum efficacy)
   c. Efficacy: Maximum efficacy produced by a drug
   d. Kd: The concentration of free drug at which all of the receptors ar...
3. A 24 years old patient is to be treated for toothache with an analg... are 2 analgesics with the same mechanism of ac... produces the same magnitude of response as 500 mg of drug Y means:
   a. Drug X has less potency than drug Y
   b. Drug X has more efficacy than drug Y
   c. Drug Y has more efficacy than drug X
   d. EC 50 of drug Y is more than the EC50 of drug X
4. Which of the following variables are expressed by X axis of a graded dose response curve?
   a. Affinity and Potency
   b. Efficacy and affinity
   c. Potency and efficacy
   d. Potency and affinity
5. Which of the following statements concer...
   a. Potency is more important clinically ...
   b. Is a measure of how much drug is required ...
   c. The greater the efficacy ...
   d. The higher the dose ...
6. Variation in the sensitivity of a population ... is best determined by which of the following ...
   a. Efficacy
   b. Potency
   c. Quantal dose response curve
   d. Graded dose response curve
7. Which of the following ... effective concentration ...

Therapeutic window

a. Efficacy

b. Potency

c. The dose which produces toxic effect in 50% of the population

a. TD50

b. TD50

ED50

9. A patient is administered drug A which can produce the same effect as Glucocorticoid therapy. This is an example of:

a. Chemical Antagonism

b. Competitive Antagonism

c. Physiological

d. Pharmacological

10. All of the following statements are true regarding the mechanism of pharmacological antagonism, EXCEPT:

a. It causes a parallel shift of the dose response curve to the right

b. It decreases the potency of an agonist

c. It increases the efficacy of an agonist

d. Its effect can be overcome by increasing the agonist concentration

11. A patient is administered drug A that produces the same effect as drug B, a right and downward shift on the dose response curve of drug B, while decreasing its maximum efficacy. Drug A is most likely a:

a. Competitive reversible antagonist

b. Irreversible antagonist

c. Partial agonist

d. Physiological antagonist

12. A patient is administered a drug that binds to and activates beta-2 receptors. This drug would most likely be:

a. A corticosteroid

b. Acetylcholine

c. Adrenaline

d. Growth hormone

GH

13. All of the following are 2nd messengers EXCEPT:

a. IP3

b. cAMP

c. Adenylyl cyclase

d. DAG

Adenylyl cyclase

14. Which of the following ligands is correctly coupled with its receptor mechanism?

a. Adrenaline: Ion channel linked receptors

b. GABA: Tyrosine kinase receptors

c. Insulin: Intracellular receptors

d. Vitamin D: Intracellular receptors

Tyrosine kinase receptors

15. The phenomenon of decrease in intensity of response to a given dose with repeated administration so that greater dosage is required to produce the same previous effect is called:

a. Allergy

b. Dependence

c. Tolerance

d. Idiosyncrasy

Tolerance

16. Chronic use of an antagonist over a long period of time may lead to an increase in number of receptors. This is called:

a. Desensitization

b. Down regulation

c. Tachyphylaxis

d. Up regulation

Up Regulation

...ation, when failure to continue administering the drug result in ... psychological and somatic disturbances called?

(c) abstinence/ withdrawal syndrome
b. idiosyncrasy
c. Tachyphylaxis
d. Allergy

18. Lipid soluble drugs with adequate concentration gradient and lipid: water partition coefficient depend for their absorption on:

a) Endocytosis
b) Primary Active transport
(c) Simple diffusion
d) Secondary active transport

19. The elimination of a drug is described as being heavily dependent on phase II metabolic reaction. Which of the following is the reaction as far as drug elimination goes?

(a) Glucoronidation
b. Deamination
c. Ester hydrolysis
d. Nitro reduction

20. The loading dose for a drug given by IV route with volume of distribution Vd 42L, target plasma concentration 5mg/L and Clearance 200L/min would be:

a) 500mg
(b) 210mg
c) 10
d) 40mg

20. General anesthetics after reaching central nervous system redistribute to other organ systems. This phenomenon results in:

(a) Termination of drug action
b) Prolonged action of drug
c) Drug reaction
d) No effect

21. A patient was given 200mg dose of drug IV and after 2 hours plasma concentration was 100mg. If the drug follows first order kinetics, what will be the plasma concentration 6hours after its administration.

(a) 25mg
b) 50mg
c) 12.5mg
d) 6.25mg

22. If the combination of two drugs is equal to the sum of their individual effect two drugs are exhibiting:

a) Antagonism
b) Cross tolerance
c) Idiosyncrasy
(d) Synergism

22. Encircle the characteristics of an orphan drug

a) A very cheap drug
b) A drug which has no therapeutic use
c) A drug which acts on orphan receptors
(d) A drug needed for treatment or prevention

23. Which of the following term best describes the ... active product?

a) Hoffman elimination
b) Distribution

24. Acidification by using ammonium chloride is used to treat patients presenting with amphetamine (weak base) overdose. Which of the following best describes the rationale for acidification of urine in this setting?

a) To decrease ionization of amphetamine
b) To reduce tubular reabsorption of amphetamine
c) To increase tubular reabsorption of amphetamine
d) To increase plasma protein binding of amphetamine

25. A drug with a half life of 20hrs is administered by continuous IV infusion. Which of the following best approximates the time for the drug to reach steady state?

a) 20hrs
b) 33hrs
c) 40hrs
d) 80hrs 80/20 5

6. Aspirin is a weakly acidic drug with pKa of 6.5 . If administered orally at which of the following sites of absorption will the drug be able to readily pass through the membrane?

a) Mouth pH 7
b) Stomach pH 2.5
c) Ileum pH 7
d) Duodenum pH 6.1

. Which of the following cytochrome isoform is responsible for metabolizing the largest mber of drugs?

a) CYP3A4
b) CYP1A2
c) CYP2D6
d) CYP2C9

Which of the following drug is an established inducer of cytochrome P450enzymes

a) Cimetidine
b) Ketoconazole
c) Grapefruit juice
d) Barbiturates

patient of pneumonia was given tobramycin 200mg IV. After 10mins the plasma entration was found to be 5mg/L. Assuming no elimination of the drug in 10mins parent volume of distribution of tobramycin?

) 4L/min
) 40L
c) 0.1mgL
d) 1000L

e term that best describes the unexpected abnormal response to a drug is

Tolerance
Tachyphylaxis
c) Idiosyncrasy
d) Resistance

MCQ's

P.K + P.D

GENERAL PHARMACOLOGY TEST

MCQ s

Encircle the best choice.

Maximum Marks: 20

Time allowed: 20 minutes

1. Drugs administered through which route show 100% bioavailability?
a) oral (b) intravenous c) subcutaneous d) topical

2. An example of G-protein coupled receptors is: α, β adrenoceptors → also muscarinic cholinoceptors.
a) insulin receptor b) nicotinic receptor (c) muscarinic receptor

3. A drug which is lipid soluble and unionized has:
(a) high volume of distribution b) low volume of distribution c) no absorption

4. A drug which undergoes high first pass metabolism:
a) has high bioavailability b) needs lower dose (c) needs higher dose

5. A constant fraction of the drug is metabolized per unit time in: constant amount = zero order
a) zero order kinetics (b) first order kinetics

6. An antagonist is the drug that has: high affinity but zero intrinsic activity.
(a) affinity b) intrinsic activity c) both a and b none

7. Prolonged deprivation of an agonist on the receptors results in ncreased sensitivity, this is:
a) down regulation (b) up regulation c) both d) none

8. The amount of a drug required to produce a response is called:
a) maximal efficacy (b) potency c) therapeutic index d) ligand

9. A genetically determined unexpected abnormal reaction to a drug is known as:
a) toxic effect b) dependence (c) idiosyncrasy d) tolerance

10. The ability of a drug to cause fetal abnormalities is known as:
(a) teratogenicity b) carcinogenicity c) cross tolerance d) allergic reaction

11. The effect of plasma protein binding on the duration of drug action is that it is:
(a) prolonged b) shortened c) none

GENERAL PHARMACOLOGY 2015

SEQs

Time Allowed: 50 minutes **Maximum Marks: 30**

Attempt all questions

1. a) Write three possible consequences of first pass metabolism. 3
   b) Write two differences between first and zero order kinetics with examples. 2

2. a) Name two 2nd messengers of G – protein coupled receptors. Described signaling mechanism of any G – protein coupled receptor. 3
   b) What are the two most important factors which determine half life of a drug? 2

3. a) Write two differences between graded dose response curve and quantal dose response curve. 2
   b)) Define efficacy and potency. Which of these two attributes is more important about a drug?

4. Write with example the clinical significance of:
   a) Plasma Protein Binding of drugs 1.5
   b) Microsomal enzymes induction 1.5
   c) Microsomal enzyme inhibition 1.5

5. a) Define volume of distribution. How it is calculated? 3
   b) What is the difference between Elimination and Excretion. 2

6. Define
   a) Partial agonist

12. Microsomal drug reactions occur in: ER.

a) nucleus (b) endoplasmic reticulum (c) mitochondria d) plasma

13. The effect of enzyme induction on a drug is:

a) increased plasma level (b) decreased plasma level c) none

14. Time taken for the plasma concentration of a drug to be reduced to half of its initial value is known as:

a) bioavailability (b) plasma half life c) maintenance dose d) loading dose

15. The maintenance dose depends upon: $M.D = \frac{CL \times Plasma\ drug \times Bioavai}{Bioavailibility}$

a) volume of distribution (b) clearance c) both d) none

16. The receptors associated with Steroids are: IC

a) ion channels b) G-protein coupled (c) intracellular d) none

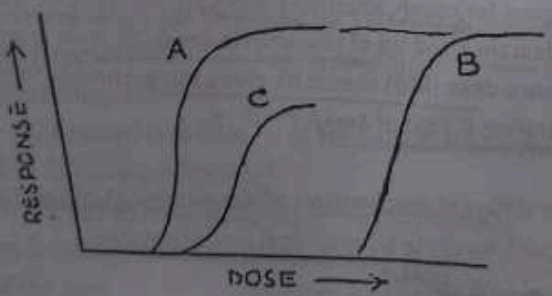
17. The ratio of median toxic dose to median effective dose is:

a) antagonism (b) therapeutic index c) Allergy d) dependence

18. The requirement of higher dose of a drug to produce the same response is:

a) cumulation (b) tolerance c) withdrawal d) none

19. THE DOSE RESPONSE CURVE SHOWN:



19. a) Drug A has more efficacy b) Drug B has more efficacy
Because both produce max effect regardless of dose
(c) A & B have same efficacy d) none

20. a) Drug C is the most potent (b) Drug A is more potent that drug B
because producing given magnitude at less dose than B.
c) Drug A and C have same potency d) Drug A is the most potent

GENERAL PHARMACOLOGY

SEQs

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Attempt all questions.

1. a) What is dose response curve? Define efficacy and potency. 1+2
   b) Write two differences between first and zero order kinetics with examples. 3
2. a) Write two consequences of first pass metabolism. 2
   b) Name two 2nd messengers of G – protein coupled receptors. Described signaling mechanism of any G – protein coupled receptor. 2+2
3. a) Write with example the clinical significance of:
   i) Plasma Protein Binding of drugs 1.5
   ii) Microsomal enzymes induction 1.5
   b) Why do some patients with G6PD deficiency have bleeding tendency when given certain drugs?
4. a) Describe different types of drug interaction with examples. 3
   b) A patient admitted in hospital for cough, shortness of breath and fever is prescribed antibiotic tobramycin. The clearance and Vd of tobramycin are 0.08L/min and 40L respectively. What maintenance dose (MD) should be given intravenously to obtain a steady state plasma concentration (CPSS) of 4mg/L? 3
5. a) Define tolerance. What are different mechanisms of development of tolerance? 4
   b) What is therapeutic window? Illustrate by graphical representation. 2

Bioequivalence: Two drugs formulations are bioequivalent if they show (i) comparable bioavailability (ii) Same time to reach peak blood conc.

Therapeutic equivalence: Two drug formulation are Therapeutically equivalent if they are "Pharmaceutically equivalent" i.e (i) Same dosage form (ii) Same active ingredient (iii) Same Route of adm... Lpn 30

Lpn pg#8 PK.

Lpn pg#27

Pg# 11 Lippin. Notes.

Lpn 15.

G6PD caused red blood cell Hemolysis which result oxidative stress. e.g antimalarial drugs given to patients caused anemia bcz hemolysis of RBC and oxidative stress e.g Sulfonamide → Aplastic Anemia.

P.K.

↓ in responsiveness to a drug upon repeated administration over a long period of time.

Types:
→ Pharmacokinetics: Enzyme Induction → ↑ drug metabolism
Example: Rifampicin, barbiturate, aspirine.
→ pharmacodynamics: produce due to a change in receptor or efficiency of receptor coupling to response
e.g: drugs acting on CNS e.g opioids continued administration of narcotics analgesics → leads to ↓ in sensitivity of opioid receptor.

General pharma Pool

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5. Encircle the characteristics of an orphan drug.

A. A very cheap drug
B. A drug which has no therapeutic use
C. A drug which acts on orphan receptors
D. A drug needed for treatment or prevention of a rare disease.

6. Which of the following term best describes the conversion of inactive drug into an active product?

A. Hoffman elimination
B. **Pro drug**
C. Distribution
D. Placebo

7. Which of the following cytochrome isoform is responsible for metabolizing the largest number of drugs?

A. **CYP3A4**
B. CYP2D6
C. CYP1A2
D. CYP2C9

8. Which of the following drug is an established inducer of cytochrome P450enzymes?

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B. Grapefruit juice
C. Ketoconazole
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9. A patient of pneumonia was given tobramycin 200mg IV. After 10mins the plasma concentration was found to be 5mg/L. Assuming no elimination of the drug in 10mins what is apparent volume of distribution of tobramycin?

A. 41/min
B. 0.1mgt
C. **40L**
D. 1000L

10. The term that best describes the unexpected abnormal response to a drug is:

A. Tolerance
B. **Idiosyncrasy**
C. Tachyphylaxis
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B. Up regulation
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C. **It increases the efficacy of an agonist**
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D. The higher the dose required for a given response, the more potent the drug.

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28. A 24 years old patient is to be treated for toothache with an analgesic. Drug X and Y are 2 analgesics with the same mechanism of action. Drug Xin a dose of 5 mg produces the same magnitude of response as 500 mg of drug Y. This most likely means:

A. Drug X has less potency than drug Y
B. Drug X has more efficacy than drug Y
C. Drug Y has more efficacy than drug X
D. EC 50 of drug Y is more than the EC50 of drug X

29. Which of the following defines the concentration or dose between the minimum effective concentration or dose and minimum toxic concentration or dose?

A. Efficacy
B. Intrinsic activity
C. Therapeutic index
D. Therapeutic window

30. The dose which produces toxic effect in 50 % of the population is:

A. ED50
B. TD99
C. TD50
D. ED1

31. A patient is administered insulin to a patient to oppose the hyperglycemic effects of
Glucocorticoid therapy. This is an example of:

A. Chemical Antagonism
B. Competitive Antagonism
C. Physical Antagonism
D. Physiological Antagonism