PHARMACOKINETICS TEST BANK

Done by : *Dana Hijjeh*

Q.1: All of the following are general mechanisms of drug permeation EXEPT:

(a) Aqueous diffusion

(b) Aqueous hydrolysis

(c) Lipid diffusion

(d) Pinocytosis or endocytosis

(e) Special carrier transport

Q.2: If the plasma concentration of a drug declines with "first-order kinetics", this means that:

(a) There is only one metabolic path for drug disposition

(b) The half-life is the same regardless of the plasma concentration

(c) The drug is largely metabolized in the liver after oral administration and has low bioavailability elimination

(d) The rate of elimination is proportionate to the rate of administration at all times

(e) The drug is not distributed outside the vascular system

Q.3: Distribution of drugs to specific tissues

(a) Is independent of blood flow to the organ

(b) Is independent of the solubility of the drug in that tissue

(c) Depends on unbound drug concentration gradient between blood and tissue

(d) Is increased for drugs that are strongly bound to plasma proteins

(e) Has no effect on the half-life of the drug

Q.4: A physical process by which a weak acid becomes less water-soluble and more lipid-soluble at low pH is:

(a) Distribution

(b) Elimination

(c) First-pass effect

(d) Permeation

(e) Protonation

Q.5: The following are excreted faster in basic urine:

(a) Weak acids

(b) Strong acids

(c) Weak bases

(d) None of the above

Q.6: With regard to distribution of a drug from the blood into tissues

(a) Blood flow to tissue is an important determinant

(b) Solubility of the drug in the tissue is an important determinant

(c) Concentration of the drug in the blood is an important determinant

(d) Size (volume) of the tissue is an important determinant

(e) All of the above are important determinants

Q.7: Active transport differs from facilitated transport in following ways, <u>EXCEPT</u>:

(a) Carrier is involved

(b) It is against concentration gradient

(c) Energy is required

(d) All of the above

Q.8: Based on the relation between the degree of ionization and the solubility of a weak acid, the drug aspirin (pKa 3.49) will be most water-soluble at :

(a) pH 1.0

(b) pH 2.0

(c) pH 3.0

(d) pH 4.0

(e) pH 6.0

Q.9: The route of drug administration that gives the most rapid onset of pharmacological effect is:

(a) Intramuscular injection

(b) Intravenous injection

(c) Intradermal injection

(d) Peroral administration

(e) Subcutaneous injection

Q.10: The passage of drug molecules from a region of high drug concentration to a region of low drug concentration is known as:

(a) Active transport
(b) Bioavailability
(c) Biopharmaceutics
(d) Simple diffusion
(e) Pinocytosis

Q.11: The earliest evidence that a drug is stored in tissue is:

(a) An increase in plasma protein binding
(b) A large apparent volume of distribution
(c) A decrease in the rate of formation of metabolites by the liver
(d) An increase in the number of side effects produced by the drug
(e) A decrease in the amount of free drug excreted in the urine

Q.12: The intensity of the pharmacologic action of a drug is most dependent on the:

(a) Concentration of the drug at the receptor site
(b) Elimination half-life of the drug
(c) Onset time of the drug after oral administration
(d) Minimum toxic concentration (MTC) of the drug in plasma
(e) Minimum effective concentration (MEC) of the drug in the body

Q.13: Drug that show nonlinear pharmacokinetics have which property?

(a) A constant ratio of drug metabolites is formed as the administrated dose increases
(b) The elimination half-life increases as the administrated dose increases
(c) The area under the plasma drug concentration versus time curve (AUC) increases in direct proportion to an increase in the administrated dose
(d) Both low and high doses follow first-order elimination kinetics
(e) The steady-state drug concentration increases in direct proportion to the dosing rate

Q.14: The loading dose of a drug is usually based on the:

(a) Total body clearance of the drug in
(b) Percentage of drug bound to plasma proteins
(c) Fraction of drug excreted unchanged in the urine
(d) Apparent volume of distribution and desired drug concentration in plasma
(e) Area under the plasma drug concentration versus time curve

Q.15: Which tissue has the greatest capacity to bio-transform drugs?

(a) Brain

(b) Kidney

(c) Liver

(d) Lung

(e) Skin

Q.16: Which of the following acids has the highest degree of ionization in an aqueous solution?

(a) Aspirin pKa = 3.5

(b) Indomethacin pKa = 4.5

(c) Warfarin pKa = 5.1

(d) Ibuprofen pKa = 5.2

(e) Phenobarbital pKa = 7.4

Q.17: The excretion of a weakly acidic drug generally is more rapid in alkaline urine than in acidic urine. This process occurs because

(a) A weak acid in alkaline media will exit primarily in its ionized form, which cannot be reabsorbed easily

(b) A weak acid in alkaline media will exit in its lipophilic form, which cannot be reabsorbed easily

(c) All drugs are excreted more rapidly in an alkaline urine

Q.18: Alkalization of urine hastens the excretion of

(a) Weakly basic drugs

(b) Weakly acidic drugs

(c) Strong electrolytes

(d) Non-polar drugs

Q.19: Active transport of a substance across biological membrane has the following characteristics EXCEPT:

(a) It is specific

(b) It is pH dependent

(c) It is saturable

(d) It requires metabolic energy

Q.20: Bioavailability differences among oral formulations of a drug are most likely to occur if the drug

(a) Is freely water soluble

(b) Is completely absorbed

(c) Is incompletely absorbed

(d) Undergoes little first-pass metabolism

Q.21: Bioavailability of drug refers to

(a) Percentage of administrated dose that reaches systemic circulation in the unchanged form

(b) Ratio of oral to parenteral dose

(c) Ratio of orally administered drug to that excreted in the feces

(d) Ratio of drug excreted unchanged in urine to that excreted as metabolites

Q.22: Weakly acidic drugs

(a) Are bound primarily to an acid glycoprotein in plasma

(b) Are excreted faster in alkaline urine

(c) Are highly ionized in the gastric juice

(d) Do not cross blood-brain barrier

(e) b+d

Q.23: High plasma protein binding

(a) Increase the volume of distribution of the drug

(b) Facilitates glomerular filtration of the drug

(c) Minimizes drug interactions

(d) Generally makes the drug long acting

Q.24: Biotransformation of drugs is primarily directed to

(a) Activate the drug

(b) Inactivate the drug

(c) Convert lipid soluble drugs into non-lipid soluble metabolites

(d) Convert non-lipid soluble drugs into lipid soluble metabolites

Q.25: Which of the following is not a primary/ fundamental, but a derived pharmacokinetic parameter

(a) Bio-availability
(b) Volume of distribution
(c) Clearance
(d) Plasma half-life

Q.26: If a drug is eliminated by first order kinetics

(a) A constant amount of the drug will be eliminated per unit time
(b) Its clearance value will remain constant
(c) Its elimination half-life will increase with dose
(d) It will be completely eliminated from the body in 2 x half-life period

Q.27: An undesirable effect of a drug that occurs at therapeutic doses and can be predicted from its pharmacological actions is called

(a) Side effect
(b) Toxic effect
(c) Allergic reaction
(d) Idiosyncrasy
(e) Adverse effect

Q.28: First pass metabolism

(a) Can increase the oral bioavailability of the drug
(b) Occurs only in the liver
(c) Is higher on intravenous administration
(d) Necessitates high oral dose for certain drugs

Q.29: Pharmacokinetics is

(a) The study of absorption, distribution, metabolism and excretion of drugs
(b) The study of biological and therapeutic effects of the drugs
(c) The method of development of new pharmacological agent
(d) The study of carcinogenic activity of a new drug

Q.30: In which form the drug is absorbed more rapidly?

(a) In aqueous solution

(b) In suspension

(c) In oily solution

(d) In solid form

ANSWERS

1	**2**	**3**	**4**	**5**	**6**
b	b	c	e	a	e
7	**8**	**9**	**10**	**11**	**12**
a	e	b	d	b	a
13	**14**	**15**	**16**	**17**	**18**
b	d	c	a	a	b
19	**20**	**21**	**22**	**23**	**24**
b	c	a	b	d	c
25	**26**	**27**	**28**	**29**	**30**
d	b	e	d	a	a