TEST BANK

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Q1: First pass effect is:

a) Amount of drug that is eliminated by the liver by hepatic artery.

b) The amount of the drug passed with stool after oral administration.

C) The amount of the drug destroyed by stomach acidity after oral administration of drugs for the first time.

d) Amount of drug lost due to hepatic metabolism during drug absorption for the first time after oral administration.

e) The amount of drug that bypass the Cirrhosis liver after oral administration through portosystemic anastomosis.

ANSWER: d

Q2: What does the term “bioavailability” mean?

a) Amount of a substance in urine relative to the initial doze

b) Fraction of an uncharged drug reaching the systemic circulation following any route administration

c) Permeability through the brain-blood barrier

d) Plasma protein binding degree of substance

ANSWER: B

Q3: Factor(s) that influence bioavailability of drugs:

a) First-pass hepatic metabolism

b) Solubility of the drug

c) Chemical instability in GIT

d) Nature of the drug formulation

e) All of the above

ANSWER: E

Q4: All of the following about free drugs (unbound drags) in plasma are correct EXCEPT:

a) Highly bound drugs (98% bound) have clinically significant drug-drug interactions with other drugs through displacement from binding sites on plasma protein.

b) Only free drugs can pass through glomerular filtration.

c) Only free drugs become available for hepatic metabolism.

d) Only free drugs can distribute to peripheral tissues.

e) Basic drugs bind with acidic binding sites on plasma globulins while acidic drugs bind with basic binding sites on plasma albumin.

ANSWER: A

Q5: All of the following statements related to the binding of drugs by plasma proteins are correct EXCEPT?

a) Bound drug is unable to diffuse into tissue until it becomes unbound.
b) A drug that is bound by plasma proteins will have a smaller apparent volume of distribution than if it were not bound.

c) Displacement of the bound drug by another drug can increase the effects of a given dosage of the first drug.

d) Bound drug is the pharmacologically active part of the drug

e) Acidic drugs are bound mostly to plasma albumin.

ANSWER:D

Q6: The route of drug administration is determined by?

a) Water solubility of the drug
b) Lipid solubility of the drug
c) Ionization of the drug
d) Desirability of rapid onset of action of the drug
e) All of the above

ANSWER:E

Q7: Binding of a drug to plasma proteins will tend to:

a) Decrease half-life.

b) Decrease its rate of glomerular filtration.

c) Increase its rate of biotransformation.

d) Increase its concentration in the plasma

e) Increase its pharmacological activity

ANSWER: B

Q8: What is characteristic of the oral route?

a) Fast onset of effect

b) Absorption depends on GI tract secretion and motor function

c) A drug reaches the blood passing the liver

d) The sterilization of medicinal forms is obligatory

ANSWER: C

Q9: Pick the feature of the sublingual route:

a) Pretty fast absorption

b) A drug is exposed to gastric secretion

c) A drug is exposed more prominent liver metabolism

d) A drug can be administrated in a variety of doses

ANSWER: A

Q10: Correct statements listing characteristics of a particular route of drug administration include all of the following EXCEPT:

a) Intravenous administration provides a rapid response

b) Intramuscular administration requires a sterile technique

c) Inhalation provides slow access to the general circulation

d) Subcutaneous administration may cause local irritation

ANSWER: C

Q11: Biotransformation of the drugs is to render them:

a) Less ionized

b) More pharmacologically active

c) More lipid soluble

d) Less lipid soluble

ANSWER:D

NOTE :chemical alteration by various bodily systems to create compounds that are more easily excreted from the body called the biotransformation.

Q12: High plasma protein binding?

a) Generally makes the drug long acting

b) Facilitates glomerular filtration of the drug

c) Increases the volume of distribution of the drug

d) Minimizes drug interactions E) Makes the drugs more potent

ANSWER:A

Q13:The term "chemical antagonism" means that:

a) two drugs combine with one another to form an inactive compound.
b) two drugs combine with one another to form a more active compound.

c) two drugs combine with one another to form a more water soluble compound.

d) two drugs combine with one another to form a more fat soluble compound

ANSWER:A

Q14: A 24-year-old female is prescribed erythromycin for gastroparesis. It is prescribed four times daily due to its short half-life. What is the rationale for such a frequent dosing?

a) Achieve the steady-state plasma concentration of the drug
b) Aid more complete distribution of the drug
c) Avoid the toxicity of the drug because of its low therapeutic index
d) Ensure that the drug concentration remains constant over time
e) Inhibit the first-pass metabolism of the drug

ANSWER: BOTH A AND D :)

Q15: Which of the following processes occurred before the drug enters the systemic circulation?

a) Distribution
b) Drug therapeutic effect
c) First pass metabolism
d) Drug elimination through kidney
e) Protein binding

ANSWER:C

Q16:Which of the following is NOT an example of drug misuse?

a) Not following the instructions when taking a prescription medication
b) Taking a friend's prescription medication to treat headache

C) Taking an over-the-counter medication more often than is recommended

d) Regular use of increasing amounts of cocaine to get high

e) None of the above

ANSWER: E

Q17: Which of the following statements is correct?

a)Always you should write the drug chemical name in your prescription

b)For a drug with high plasma protein binding capacity, lower plasma protein level in children means that the free drug will be less

c) Metabolism is always more or in adults than children

d) Stopping a drug can be a cause of an adverse effect.

e) The risk benefit: ration for any drug is constant for the human life stages.

ANSWER :D

Q18: The route of drug administration that gives the most rapid onset of the pharmacological effect is :

a) Intradermal injection
b) Intramuscular injection
c) Intravenous injection
d) Subcutaneous injection
e) Peroral administration

ANSWER :C

Q19: High plasma protein binding :

a) Increases the volume of distribution of the drug
b) Facilitates glomerular filtration of the drug
c) Generally makes the drug long acting
d) Minimizes drug interactions
e) Makes the drugs more potent

ANSWER :C

Q20: The earliest evidence that a drug is stored in tissue (fat) is:

a) An increase in plasma protein binding
b) A large apparent volume of distribution (VD)
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

ANSWER :b

Q21:the most important mechanism for drugs to enter the body ?
Ans: passive diffusion

Q22: the safest and affordable way for taking drugs is? **Ans**: orally

Q23: First pass effect is: **Ans**: drugs absorbed from GIT must pass through the gut wall and portal vein to the liver before reaching the systemic circulation.

Q24: Bioavailability : **Ans:** it is the fraction of the uncharged active drug reaching the systemic circulation ,following drug administration ,irrespective of the route .

Q25: In the following, what describes absorption?
a) The tightness that drug bind to receptor
b) Irreversible transport from site of administration to the bloodstream
c) Drug leaving the blood to peripheral tissue
d) Proportional to drug concentration in plasma (First order kinetics implied)

ANSWER: A

Q26:In the following, what describes distribution?

a) The tightness that drug bind to receptor

b) Irreversible transport from site of administration to the bloodstream

c) Drug leaving the blood to peripheral tissue

d) Proportional to drug concentration in plasma (First order kinetics implied)

ANSWER :C

Q27: All of the following about passive absorption is true EXCEPT?

a) The driving force is concentration gradient

b) Doesn't involve a carrier

c) The process shows a low structural specificity

d) The process is saturable

ANSWER: D

Q28: The following factor(s) influencing drug absorption?

a) Blood flow to the absorption area

b) Total surface area available

c) Contact time at the absorption surface

d) All of the above

ANSWER :D

Q29: The following factor(s) determine drug distribution?

a) Blood flow

b) Capillary permeability

c) Binding of drug to plasma proteins

d) All of the above

ANSWER: d

Q30: Pharmacokinetics is?

a) The study of biological and therapeutic effect of drugs

b) The study of absorption, distribution, metabolism and excretion of drugs

c) The study of mechanisms of drug action

d) The study of methods of new drug development

ANSWER :b

Q31: What kind of substances can't penetrate membranes by passive diffusion?

a) Lipid soluble

b) Non-ionized

c) Hydrophobic

d) Hydrophilic

ANSWER :d

Q32:What's implied by (active transport)?

a) Transport of drugs through a membrane by means of diffusion

b) Transport without energy consumption

c) Engulf of drug by a cell membrane with a new vesicle formation

d) Transport against concentration gradient

ANSWER :d

Q33: Pick out the appropriate alimentary route of administration when passage of drug through liver is minimized?

a) Oral

b) Transdermal

c) Rectal

d) Intraduodenal

ANSWER :C

Q34:Which route of drug administration is most likely to lead to the first pass effect?

a) Sublingual

b) Oral

c) Intravenous

d) Intramuscular

ANSWER:b

Q35:What is characteristic of the sublingual route?

a) fast absorption

b) Drug exposed to gastric secretion

c) Drug exposed to more prominent liver metabolism

d) Drug can be administrated in a variety of doses

ANSWER: a

Q36:Parenteral administration?

a) Cannot be used with unconsciousness patients

b) Generally, results in a less accurate dosages than oral administration

c) Usually produces a more rapid response than oral administration

d) Is too slow for emergency use

ANSWER:C

Q37: Correct statements listing characteristics of a particular route of drug administration include all of the following EXCEPT?

a) Intravenous administration provides a rapid response

b) Intramuscular administration requires a sterile technique

c) Inhalation provides slow access to the general circulation

d) Subcutaneous administration may cause local irritation

ANSWER :C

Q38: All of the following statements related to the binding of drugs by plasma proteins are correct EXCEPT?

a) Bound drug is unable to diffuse into tissue until it becomes unbound

b) Displacement of the bound drug by another drug can increase the effects of a given dosage of the first drug

c) Bound drug is the pharmacologically active part of the drug

d) None of the above

ANSWER:c

Q39: Binding of a drug to plasma proteins will tend to?

a) Decrease half-life

b) Decrease rate of glomerular filtration

c) Increase its rate of biotransformation

d) Increase its concentration in plasma

ANSWER:b

Q40: Proteins which a drug molecule bind are?

a) Receptors

b) Ion channels

c) Carriers

d) All of the above

ANSWER :d

Q41:A pharmacological response might be reduced by all of the following EXCEPT?

a) Low solubility of drug

b) Abnormal target receptors

c) Lack of absorption at site of administration

d) Interference with drug elimination

ANSWER:d

Q42:The oral route of drug administration tends to be associated with all of the following EXCEPT?

a) Relative safety

b) Rapid response

c) Convenience

d) Incomplete absorption

ANSWER:b

Q43: Variation in pharmacological responses to drugs among individuals can be attributed to?

a) Drug-Drug interactions

b) Sex

c) Age

d) All of the above

ANSWER:d

Q44: Hydrophilic drug with a law molecular weight is most likely to distribute to which of the following compartments?

a) Extracellular

b) Plasma

c) Total body water

d) A + B

ANSWER: C

Q45: what does pharmacokinetics include ?

a) pharmacological effects of drugs

b) unwanted effects of drugs

c) chemical structure of a medicinal agent

d) distribution of drugs in the organism

ANSWER : D

Q46:The main mechanism of most drugs absorption in GI is :

a) Active transport (carrier-mediated diffuson)
b) Filtration (aqueous diffusion)
c) Endocytosis and exocytosis
d) Passive diffusion (lipid diffusion)

ANSWER:D

Q47: The reasons determining bioavailability are:

a) Rheological parameters of blood
b) Amount of a substance obtained orally and quantity of intakes
c) Extent of absorption and hepatic first pass effect
d) Glomerular filtration rate

ANSWER :C

Q48:A hydrophilic medicinal agent has the following property:

a) Low ability to penetrate through the cell membrane lipids
b) Penetrate through membranes by means of endocytosis
c) Easy permeation through the BBB
d) High reabsorption in renal tubules

ANSWER: A

Q49: Most of drugs are distributed homogeneously:

True
False

ANSWER: B

Q50: The volume of distribution relates :

a) Single to a daily dose of an administrated drug
b) An administrated dose to a body weight
c) An uncharged drug reaching the systemic circulation
d) The amount of a drug in the body to the concentration of a drug in plasma

ANSWER : D

Q51: A small amount of the volume of distribution is common for lipophilic substances easy penetrating through barriers and widely distributing in plasma , interstitial and cell fluids :

a)True

b)False

ANSWER: B

Q52: The term biotransformation includes the following :

a) Accumulation of substances in a fat tissue
b) Accumulation of substances in a tissue
c) Binding of substances with plasma proteins
d) Process of physicochemical and biochemical alteration of a drug in the body

ANSWER: D

Q53:What does pharmacokinetics include ?

a) Complications of drug therapy
b) Drug biotransformation in the organism
c) Influence of the drug on metabolism processes
d) Influence of the drug on genes

ANSWER :B

Q54: ALL of the following about passive absorption is the true except :

a) The driving force is concentration gradient
b) Doesn't involve a carrier
c) The process is saturable
d) The process shows a low structural specificity
e) The process is suitable for lipid soluble drugs

ANSWER : C

Q55: Biological barriers include all except :

a) Renal tubules
b) Cell membrane
c) Capillary walls
d) Placenta

ANSWER: A

Q56: A 27-year-old female with vulvovaginal candidiasis is given a one-time 100 mg dose of oral fluconazole. She has no other pertinent medical problems and takes no prescription medications. Administration of the medication results in a peak plasma concentration of 20 mg/L. What is the apparent volume of drug distribution?

a) 0.5 L b) 1 L c) 3 L d) 5 L e) 50 L

ANSWER :d

Q57: All of the following about free drugs (unbound drags) in plasma are correct EXCEPT:

a) Highly bound drugs (98% bound) have clinically significant drug-drug interactions with other drugs through displacement from binding sites on plasma protein

b) Only free drugs can pass through glomerular filtration

c) Only free drugs become available for hepatic metabolism

d) Only free drugs can distribute to peripheral tissues

e) Basic drugs bind with acidic binding sites on plasma globulins while acidic drugs bind with basic binding sites on plasma albumin

answer : a

Q58 : The volume of distribution for a drug that is completely retained in the vascular compartment would be:

a) High

b) Low

c) Unchanged

d) Cannot be determined

ANSWER :B

Q59: What is the proportion of non-ionized form of week base Pka=9.4 when put in media ph=7.4

a)99%

b)1%

c)0.1%

d)50%

ANSWER: B

Q60: 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 =7.4

ANSWER: A

Q61: Passive diffusion does not depend on :

a) Permeability
b) Thickness
c) Concentration difference
d) number of transports

ANSWER: D

STUDY QUESTIONS (LIPPINCOTT, 6TH EDITION)

1.1 An 18-year-old female patient is brought to the emergency department due to drug overdose. Which of the following routes of administration is the most desirable for administering the antidote for the drug overdose?

A. Intramuscular.
B. Subcutaneous.
C. Transdermal.
D. Oral.
E. Intravenous.

Correct answer = E. The intravenous route of administration is the most desirable because it results in achievement of therapeutic plasma levels of the antidote rapidly.

1.2 Chlorothiazide is a weakly acidic drug with a 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 approximately 7.0).
B. Stomach (pH of 2.5).
C. Duodenum (pH approximately 6.1).
D. Jejunum (pH approximately 8.0).
E. Ileum (pH approximately 7.0).

Correct answer = B. Because chlorothiazide is a weakly acidic drug (pKa = 6.5), it will be predominantly in non-ionized form in the stomach (pH of 2.5). For weak acids, the nonionized form will permeate through cell membrane readily.

1.3 Which of the following types of drugs will have maximum oral bioavailability?
A. Drugs with high first-pass metabolism.
B. Highly hydrophilic drugs.
C. Largely hydrophobic, yet soluble in aqueous solutions.
D. Chemically unstable drugs.
E. Drugs that are P-glycoprotein substrates.

Correct answer = C. Highly hydrophilic drugs have poor oral bioavailability, because they are poorly absorbed due to their inability to cross the lipid-rich cell membranes. Highly lipophilic (hydrophobic) drugs also have poor oral bioavailability, because they are poorly absorbed due their insolubility in aqueous stomach fluids and therefore cannot gain access to the surface of cells. Therefore, drugs that are largely hydrophobic, yet have aqueous solubility have greater oral bioavailability because they are readily absorbed.

1.4 Which of the following is true about the blood–brain barrier?
A. Endothelial cells of the blood–brain barrier have slit junctions.
B. Ionized or polar drugs can cross the blood–brain barrier easily.
C. Drugs cannot cross the blood–brain barrier through specific transporters.
D. Lipid-soluble drugs readily cross the blood–brain barrier.
E. The capillary structure of the blood–brain barrier is similar to that of the liver and spleen**.**

Correct answer = D. Lipid-soluble drugs readily cross the blood–brain barrier because they can dissolve easily in the membrane of endothelial cells. Ionized or polar drugs generally fail to cross the blood–brain barrier because they are unable to pass through the endothelial cells, which do not have slit junctions.

1.5 A 40-year-old male patient (70 kg) was recently diagnosed with infection involving methicillin-resistant S. aureus. He received 2000 mg of vancomycin as an IV loading dose. The peak plasma concentration of vancomycin was reported to be 28.5 mg/L. The apparent volume of distribution is:

A. 1 L/kg.
B. 10 L/kg.
C. 7 L/kg.
D. 70 L/kg.
E. 14 L/kg**.**

Correct answer = A. Vd = dose/C = 2000 mg/28.5 mg/L = 70.1 L. Because the patient is 70 kg, the apparent volume of distribution in L/kg will be approximately 1 L/kg(70.1 L/70 kg).