بسم الله

(وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ)

الرحمن الرحيم

Pharmacology | MID

Past Papers

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2023 Mid Past Papers

◉‿◉لو لقيتوا غلط رجاءً لا تدعوا علينا
نقلنا اسئلة 2023 وكلنا ثقة بفريق دِست وصحة حلّه

و في اسئلة مش مطلوبة منا زي اسماء الادوية واشياء ثانية فلا داعي للهلع
ان شاء الله امورنا بتكون تمام بالامتحان
الله يسعد اوقاتكوا دفعتي
- ريم

Q1 : Which of the following is a disadvantage of drug absorbed rectally?

A. The absorption is irregular and unpredictable
B. 50% of the absorbed drug bypass the first pass effect
C. It can be given to vomiting patients

Ans : A

Q2 : Which definition best describes pharmacodynamics?

A. Absorption, distribution, biotransformation and excretion of the drug
B. The effect of the drug in the body, including mechanism of action

Ans : B

Q3 :Bioavailability is the fraction of the drug that reaches circulation unchanged. All of the following reduce bioavailability except:

A. Incomplete disintegration
B. Destruction by gastric acid
C. Grapefruit
D. Enterohepatic circulation
E. First pass effect

Ans : C

Q4 : Calculate the loading dose if the volume of distribution is 500 L and the clearance is 7.5 L/hour
and the therapeutic dose concentration is 2 mg/L.

Ans : 1000 mg

Q5 : The incorrect statement about steady state in first order drug:

A. Steady state is reached after 4 half lives approximately
B. Steady state means constant concentration of the drug in the blood
C. Steady therapeutic dose is reached, regardless the size of the dose

Ans : C

Q6 : Which of the following is most likely to cause hepatotoxicity?

A. Paracetamol
B. Aspirin
C. None of the above

Ans : A

Q7 : Which of the following is a common cause of drug toxicity during overdose?

A. Accumulation of toxic metabolite
B. Increase in receptor sensitivity
C. Decrease in drug excretion

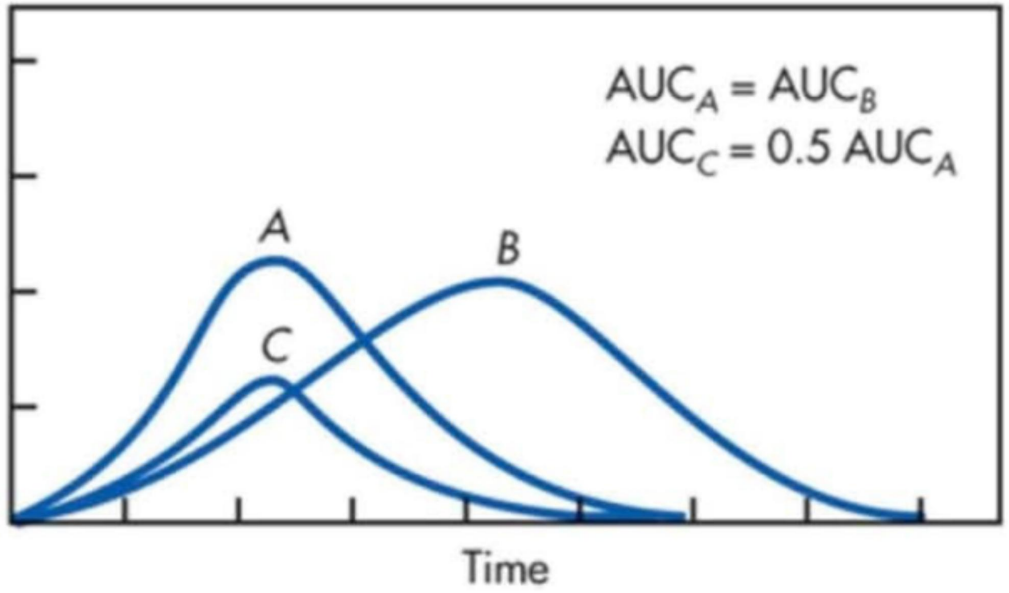
Ans : A

Q8 : Which definition best describes agonists?

A. A drug that blocks the receptor
B. A drug that mimics the action of endogenous ligand by binding to receptor
C. A drug that inhibits another drug
D. None of the above

Ans : B

Q9 : The correct statement:



A. A is bioequivalent to C
B. B has not the same extent of bioavailability of A
C. B has less bioavailability rate than A

Ans : C

Q10 : Oral route is most susceptible to the first pass effect, choose the correct statement:

A. A patient with impaired liver function should take a higher dosage
B. First pass effect drugs should be avoided
C. Oral dose is usually higher than intravenous dose

Ans : C

Q11 : ACE inhibitors + potassium-sparing leads to:

A. Hypokalemia
B. Hyponatremia
C. Hyperkalemia

Ans : C

Q12 : If a drug has a half-life of 12 hours and volume of distribution of 400 liters, calculate the clearance:

Ans : 23 L/Hour

Q : 13If a drug is following first order kinetics ,with rate of elimination constant equals to/1155.0 hour,

calculate the half life:

Ans : 6 hours

Q : 14Most drugs are weak acids or weak bases that means they get partially ionized in physiological pH . Which is the correct statement:

A. A .Weak organic acid gets ionized in gastric acid

B .Weak organic acid gets protonated in alkaline urine

C .Weak basic drug gets ionized in gastric acid

Ans : C

Q : 15What is incorrect about carrier-mediated transport:

A .The substrate can be a peptide

B .The substrate is lipid soluble

C .The receptors are saturable

D .The receptors are selective

E .The receptor are inhibitable

Ans : B

Q :16What is the most common and safe drug administration route?

Ans : Paracetamol (oral route is the most common and safe)

Q :17Calculate the maintenance dose) MD (and loading dose) LD (if VD ,500=CL ,5.7=therapeutic concentration2=mg

Ans : MD15=mg/hour ,LD1000=mg

Q :18Which of the following is NOT an enzyme inhibitor?

A .Inhibition of protein synthesis

B .Inhibition of nucleic acid synthesis

C .Common substrates for the same enzyme

D .St .John’s wort

E .Macrolide inhibitor

Ans : D

Q :19Which of the following routes of drug administration is matched with a recognized disadvantage?

A. IV → High drug concentration which can lead to drug toxicity

B. B .SC → Uses solid pellets to produce effects over weeks to months

C .Inhalation → Rapid onset of action

D .SL → Rapid onset of action

E .TD → Sustained effect

Ans : A

Q :20Which of the following isn’t included in the first-pass effect?

A .Metabolism by the intestinal flora

B–E .Metabolism of the drug in the portal vein ,liver ,gut wall ,or bile excretion before reaching
systemic circulation

Ans : A

Q : 21Which of the following is CYP 450independent phase 1 reaction?

A .Dealkylation

B .Deamination

C .Hydrolyses

D .Epoxidation

E .Aromatic hydroxylation

Ans : C

Q : 22What is the enzyme that is responsible for metabolism of %50 of drugs metabolized in the liver?

A .CYP1A2

B .CYP2D6

C .CYP3A4

Ans : C

Q :23Which of the following mismatches?

A .Glutathione transferase — glutamine

B .Sulfotransferases — PAPS

C .Acetyltransferases — Acetyl CoA

Ans : A

Past Papers from 2022 and earlier

Pharmacodynamics
Lecture 1

(2022)

Affinity is:

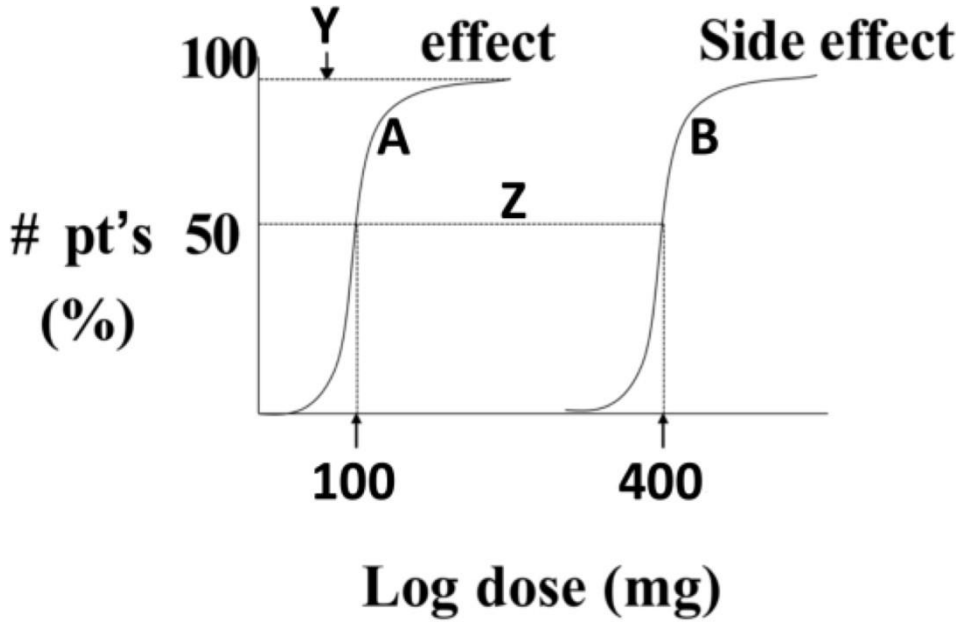
A. How tightly a drug binds to plasma proteins
B. How tightly a drug binds to a receptor

Ans : B

(2022)

Based on this graph, answer the following questions:

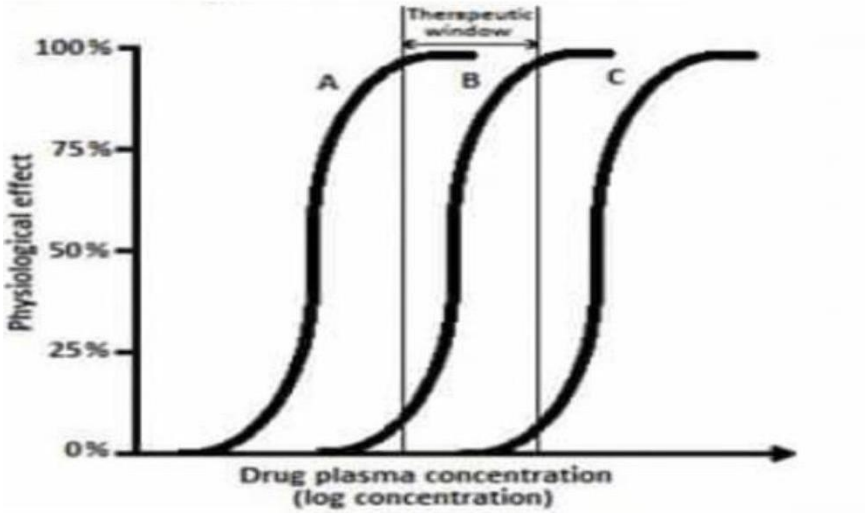
A. If curve A represents a drug and curve B represents its side effects, what does line Z represent:
B. What does the value of 400 represent?
C. According to previous question, what is the therapeutic index for the drug?
D. What does line Y represent ?



Ans :
A :Theraputic index (theraputic window)
B:Lethal dose (LD)
C: 4
D:intrinsic activity

(2021)

Given the information in the figure below, which of the following statements is correct:



A. Drug A has the most appropriate pharmacodynamic properties of the three drugs shown as it reaches maximal efficacy within the therapeutic window.
B. Drug B has the most appropriate pharmacodynamic properties of the three drugs shown as a range of its plasma concentrations are within the therapeutic window.
C. Drug C has the most appropriate pharmacodynamic properties of the three drugs shown as non-toxic effects are achieved within the therapeutic window
D. All three drugs have appropriate pharmacodynamic properties

*Ans : *B*

(2021)

One of the following is not true about pharmacodynamics:

A. It studies the biochemical and physiological effects of drugs and their mechanism of action.
B. It studies the relationship of drug concentration to drug effect.
C. it studies the absorption and distribution of drugs.
D. It studies drug-receptor interactions

Ans : C

(2021)

Example of a tyrosine kinase receptor:

A. Steroid receptor
B. Glucagon receptor
C. Epinephrine receptor
D. Insulin receptor

Ans : D

(2020)

In the following, what describes affinity?

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)

Ans : A

(2020)

Pharmacodynamics involves:

A. Info about main mechanisms of drug absorption
B. Info about unwanted effects
C. Info about biological barriers
D. Info about excretion of a drug from the organism.

Ans : B

(2020)

Therapeutic index of a drug reflects its

A. Relative safety
B. Duration of action
C. Onset effects
D. Potency

Ans : A

(2020)

Which of the following statements about drug receptor interactions is TRUE?

A. An agonist interacts with its target receptors and produces a biological effect
B. A reversible antagonist shifts the dose response curve to the right without affecting the maximal response
C. Partial agonist are drugs that have affinity for receptors with moderate efficacy
D. All of the above

Ans : D

(2020)

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

Ans : D

(2020)

Which of the following statements is CORRECT?

A. If 10 mg of drug A produces the same response as 100 mg of drug B, then drug A is more efficacious than drug B
B. Skipping a dose is not important in calculating the time to reach steady state
C. Generally, Reduction in the oxidative metabolism through cytochrome P450 system result in a reduction in the drugs clearance

Ans : C

When two drugs with the same effect give together and (2020) produce an effect that is greater in magnitude than the sum of their effects when the drugs are given individually, we call this?

A. Competitive drug effect
B. Synergic drug effect
C. Additive drug effect
D. Potentiation drug effect

Ans :B

(2020)

Receptors are macromolecules that:

A. Are designed to attract drugs.
B. Are resistant to antagonists
C. Exist as targets for physiological neurotransmitters and hormones
D. Are only on the outer surface of cells
E. Are only inside of cells

Ans :C

A 65-year-old man suffering from osteoarthritis has been (2020) taking Naproxen 500mg twice a day for one month. For some reasons, the physician decided to try another drug that work on the as same receptor and prescribed him celecoxib that has 5 times more potent than naproxen. Which of the following was most likely the dose of celecoxib prescribed to the patient?

A. L0mg
B. 100 mg
C. 50mg
D. 1000 mg
E. 5 mg

Ans :B

(2020)

Which of the following statements is correct?

A. The pharmacodynamic of drugs in children and the adults is always similar as the drug targets does not differ with age.
B. The increase in total body fat usually results in an increase in the half-life of water soluble drugs.
C. Generally, Reduction in the oxidative metabolism through cytochrome P450 system result in a reduction in the drugs clearance.
D. The metabolism of drugs in children is always less than that in adults.
E. If 10 mg of drug A produces the same response as 100 mg of drug B, drug A is more efficacious than drug B.

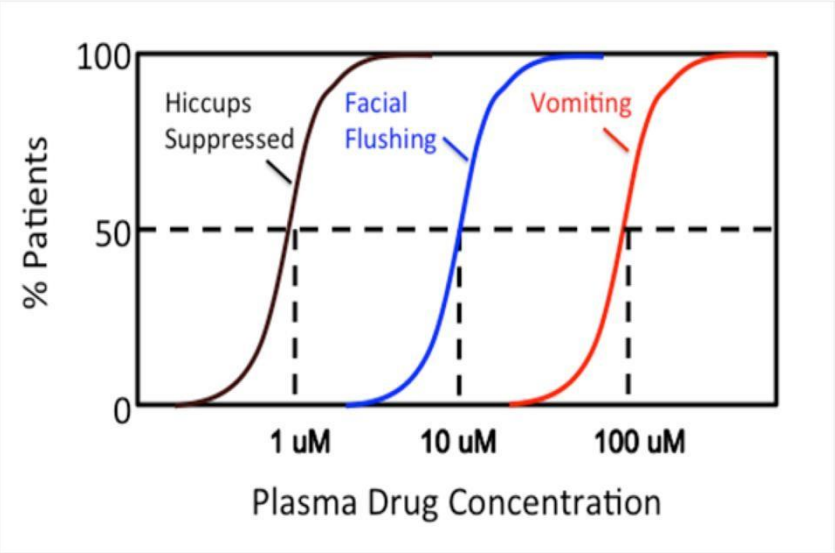
Ans :C

(2020)

Potency is

Ans :amount of drug required to initiate an effect

Your lab group has been evaluating the effects of "Ultron" a (2018) new drug for the treatment of intractable hiccups. When administered over a wide concentration range, three dose response relationships were defined in test subjects. Using facial flushing as an unwanted side effect, what would be the estimated therapeutic index for Ultron?



A. 0.1
B. 100
C. 10
D. Can't determine

Ans :C

(2018)

Digoxin is a drug that has been used to treat systolic heart failure for over 200 years. It has a therapeutic index value of

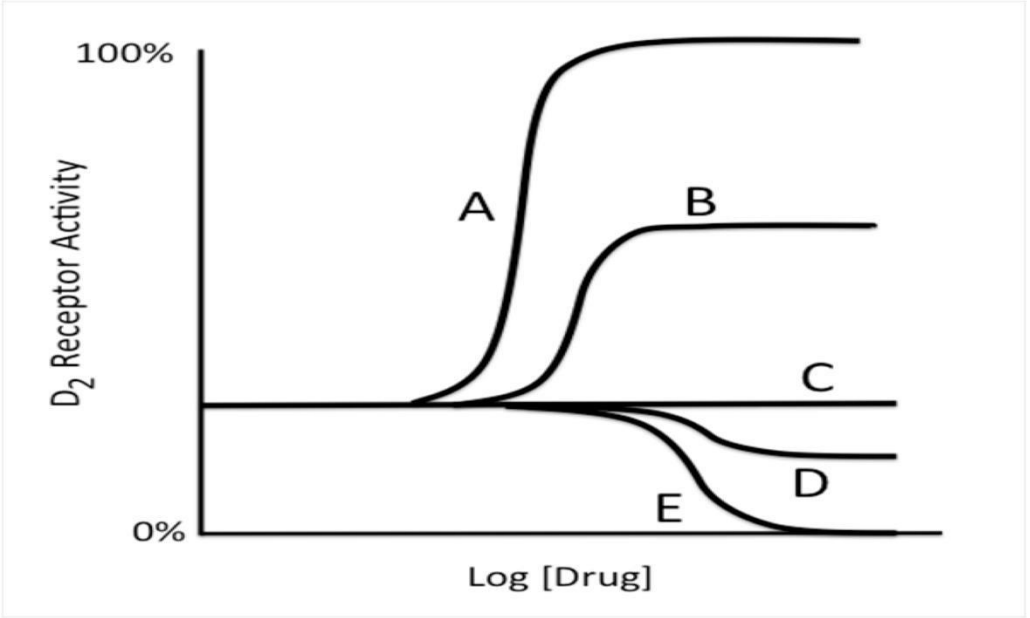
2. How many daily doses of digoxin will the average patient have to take at one time to have a 50:50 chance of developing toxic side effects?

A. One
B. Two
C. Three
D. One and a half
E. I don't know

Ans :B

(2018)

Drugs with low efficacy bind to receptors but do not fully activate them. Such "partial agonists" can act as either as a weak agonist (in the absence of a full agonist), or as a competitive antagonist (if a full agonist is present). Which curve best reflects the effect produced by this type of agonist when it is administered alone.



A. A
B. B
C. C
D. D
E. E

Most probably not included in this lecture's material since we didn't discuss competitive and non competitive antagonists yet ! however , it is good to try to solve it (it's easy)

Ans :B

(2018)

What is correct concerning TI:

A. A safer drug has a higher therapeutic index
B. TI might be equal to 1
C. The more the unwanted adverse effect, the ration decreases
D. You are in danger if you take 1.8 mg/ml of Digoxin which has the margin of safety(0.8-2)

Ans :A

(2018)

A patient comes to the ER having his quadriceps muscle constantly contracted, you should give him:

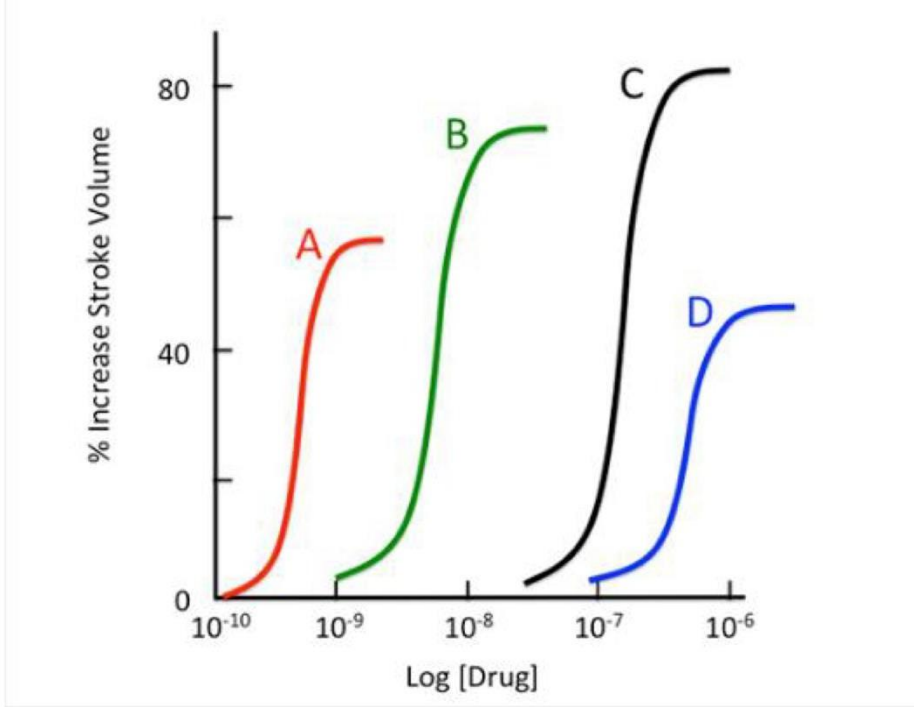
A. Norepinephrine to stimulate the sympathetic nervous system
B. An antagonist for Norepinephrine
C. Beta 2 blocker
D. None of the above

Ans :B

(2018)

Dose response data was collected during the preclinical testing of four drugs for the treatment of acute heart failure

A. Which drug studied was the most efficacious?
B. B. Of the four drugs shown, which is the most potent?



Ans :
A:C
B:A

A newly developed medication for pulmonary hypertension (2018) targets blood vessels in the lungs, but does not affect blood vessels in the liver. Which of the following is most likely true of this medication

A. It is a ligand that is specific for lung and liver blood-vessel receptors. but which is metabolized rapidly in the liver
B. It is a ligand that is specific for blood-vessel receptors in the lung but not in the li
C. It is a receptor that is upregulated when oxygen tension in the lungs is low
D. It is a receptor that is only expressed on blood vessels in the lung

Ans :B

The drug is a ligand not a receptor, although option D can be viable if it started with "It's receptor is only expressed…."

(2018)

If 10 mg of naproxen produces the same analgesic response as 100 mg of ibuprofen ,which of the following statements is correct

A. Naproxen is more efficacious than is ibuprofen
B. Naproxen is more potent than ibuprofen
C. Naproxen is full agonist , and ibuprofen is a partial agonist .
D. Naproxen is a competitive antagonist .
E. Naproxen is a better drug to take for pain relief than is ibuprofen

Ans :B

(2018)

If a 10 mg morphine produces a greater analgesic response than can achieved by ibuprofen at any dose , which of the following statements is correct ?

A. Morphine is less efficacious than is ibuprofen
B. Morphine is less potent than is ibuprofen
C. Morphine is a full agonist , and ibuprofen is a partial agonist .
D. Ibuprofen is ab competitive antagonist .
E. Morphine is a better drug to take for pain relief than is ibuprofen

Ans :E

(2018)

Which of the following regarding E max (maximum efficacy) is correct ?

A. E max assumes that as long as you increase the concentration of the drug , there will be a higher effect of the drug .
B. E max is used to compare the potency of different drugs .
C. E max assumes that all receptors are occupied by the drug and no increase in response is observed if a higher concentration of drug is obtained .
D. All of the previous points are incorrect

Ans :C

(2018)

Candesartan and irbesartan are angiotensin receptor blockers that are used to treat hypertension . The therapeutic dose range for candesartan is 4 to 32 mg , as compared to 75 to 300 mg for irbesartan , knowing that both drugs will result into same effect and response when given in a Therapeutic dose,which of the following regarding this statement is-correct ?

A. Candesartan is more potent than is irbesartan .
B. Candesartan and irbesartan have different efficacy .
C. Candesartan is a non competitive antagonist for irbesartan .
D. Irbesartan is a competitive antagonist for candesartan

Ans :A

(2018)

‘Drug efficacy' refers to

A. The range of diseases in which the drug is beneficial.
B. The maximal intensity of response that can be produced by the drug.
C. The therapeutic dose range of the drug.
D. The therapeutic index of the drug

Ans :B

(2018)

If an agonist can produce maximal effects and has high efficacy it's called

A. Partial agonist
B. Antagonist
C. Agonist-antagonist
D. Full agonist

Ans :D

(2018)

If an agonist can produce submaximal effects and has moderate efficacy it's called:

A. Partial agonist
B. Antagonist
C. Agonist-antagonist
D. Full agonist

Ans :A

(2018)

Agonist is a substance that

A. Interacts with the receptor without producing any effect
B. Interacts with the receptor and initiates changes in cell function,
   producing various effects
C. Increases concentration of another substance to produce effect
D. Interacts with plasma proteins and doesn't produce any effects

Ans :B

(2018)

Antagonist is a substance that

A. Interacts with plasma proteins and doesn't produce any effect
B. Binds to the receptors without directly altering their functions
C. Binds to the receptors and initiates changes in cell function, producing maximal effect
D. Binds to the receptors and initiates changes in cell function, producing submaximal effect

An antagonist does not produce its effect by activating the receptor to create an effect opposite to that of the agonist. Instead, it works by blocking the receptor and preventing the agonist from producing its action.

Ans :B

Pharmacokinetics Pt1
Lecture 2

(2018)

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)

Ans : c

(2018)

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)

Ans : b

(2023)

Major factor affecting absorption:

A. Lipid Solubility
B. Drug size
C. Lipid/water partition coefficient

Ans :A

(2023)

If bicarbonate is administered to make urine more alkaline which of the following statements is correct:

A-Acids would be excreted

B-Bases would be excreted

C-The binding of acids to plasma proteins would be affected

D-Decreased glomerular filtration

Answer: A

(2023)

Major factor affecting distribution:

A-Organ selectivity
B-Surface Area
C-Natural Barriers
D-Protien Binding

Answer: D

(2023)

Major site of drug absorption:

A. Intestine
B. Stomach
C. Oral mucosa
D. Skin

Answer:A

(2023)

Which of the following is not a process of pharmacokinetics:

A. Mechanism of Action
B. Absorption
C. Metabolism
D. Distribution
E. Excretion

Answer:A

(2022)

The most important mechanism of drug movement through compartments and membranes :

A-Aqueous diffusion

B- special carriers

C-lipid diffusion

D-endocytosis and exocytosis

Ans :C

(2022)

The incorrect statement is:

A. basic drugs will be unionized in basic urine
B. Acidic drugs will ionized in acidic urine
C. basic drugs will be ionized in Acidic urine
D. Acidic drugs will ionized in basic urine

Ans :B

(2022)

Compound used to alkalize urine :

A. sodium bicarbonate (NaHCO3)
B. B. Ammonium chloride (NH4Cl)
C. C. Sodium chloride (NaCl)
D. D. Ascorbic acid (vitamin C)

Ans :A

(2021)

What are adverse drug reactions (ADRs)

A. The synergistic effects that are seen when some drugs are administered concurrently
B. Responses to increased drug doses required to achieve the same physiological outcome.
C. Unintended alternative physiological responses caused by the drug that cause harm to the patient.
D. Harmful chemical interactions between two drugs that are used to treat the same clinical symptoms.

Ans :C

(2021)

To excrete weak acids faster in urine, we give the patient

A. Ammonia chloride
B. sodium bicarbonate.
C. Vitamin C
D. Citric acid

Ans :B

(2021)

Lipid diffusion is directly proportional to all of the following EXCEPT:

A. Area across which the diffusion occurs
B. Permeability coefficient
C. Concentration gradient
D. Blood supply
E. Length of the diffusion path

Ans :E

(2020)

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

Ans :D

(2020)

Proteins which a drug molecule bind are:

A. Receptors
B. Ion channels
C. Carriers
D. All of the above

Ans :D

(2020)

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

Ans :D

(2020)

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

A. Lipid soluble
B. Non-ionized
C. Hydrophobic
D. Hydrophilic

Ans :D

(2020)

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

Ans :B

(2020)

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

Ans :D

(2020)

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

Ans :D

(2020)

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
B. pH 2
C. pH 3
D. pH 4
E. pH 6

Ans :E

(2020)

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

Ans :D

What is the most important mechanism for drugs to enter the body?

A) Active transport
B) Facilitated diffusion
C) Lipid diffusion
D) Endocytosis

Ans :D

Pharmacokinetics pt2
Lecture 3

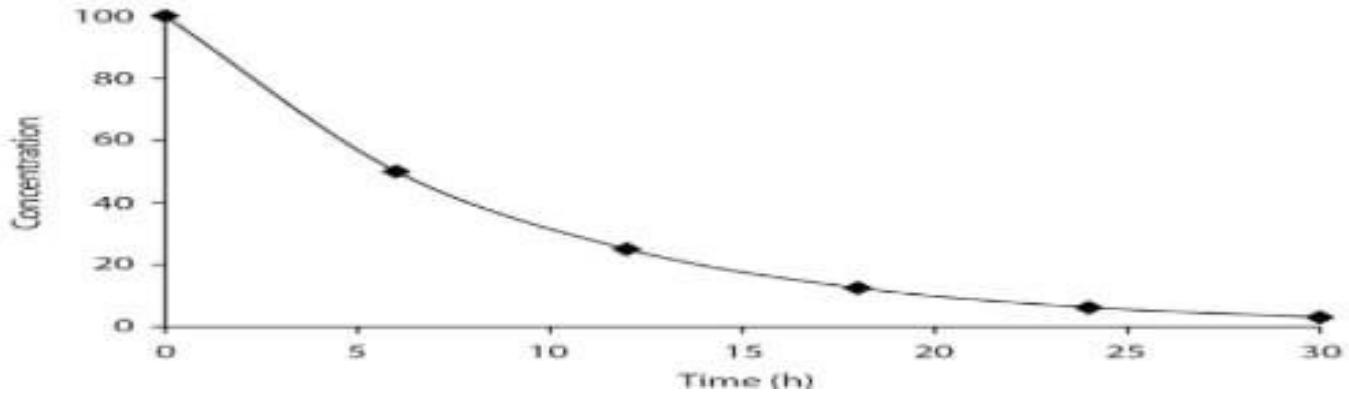
Based on this graph, What is the route of administration of this drug:

A)Oral

B) Intradermal

C)Intravenous

D) Intramuscular



The graph shows an immediate high concentration of the drug at time zero, indicating direct entry into the bloodstream, which is characteristic of intravenous administration.

Ans :C

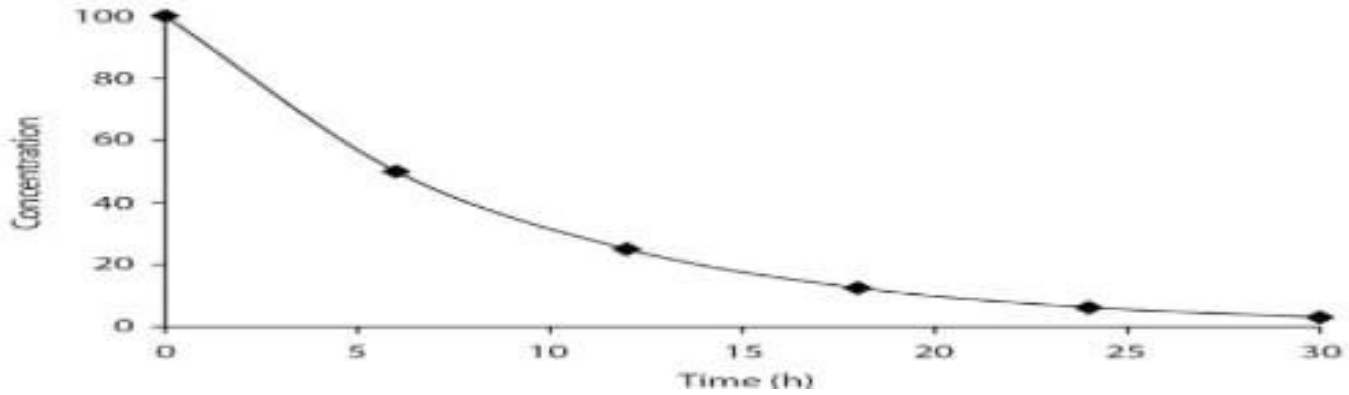
Based on this graph, What is the bioavailability of this drug :

A)25%

B) 50%

C)75%

D) 100%



The graph shows an immediate high concentration of the drug at time zero, indicating direct entry into the bloodstream, which is characteristic of intravenous administration.

Ans :C

First-pass effect is:

A) The process by which drugs are metabolized by enzymes in the stomach before entering the bloodstream.

B) The phenomenon where drugs absorbed from the gastrointestinal tract must pass through the gut wall and portal vein to the liver before reaching systemic circulation.

C) The increased bioavailability of drugs when administered intravenously compared to oral administration.

D) The effect of food on drug absorption, which alters the pharmacokinetics of orally administered medications.

Ans : B

(2018)

The addition of glucuronic acid to a drug?

a) Lowers its water solubility
b) Usually leads to inactivation of drug
c) Is an example of phase I reactions
d) Involves cytochrome P450

Ans : b

First pass effect mean :

A-Drugs that will be metabolized in the intestines, portal vein, liver before reaching the systemic circulation

B-Drugs that will reach the systemic circulation without being metabolized

C-Drugs taken orally will have the same bioavailability to the Drugs taken IV

D-It doesn't affect bioavailability

Ans :A

Factors reduce the bioavailability:

A-First pass effect
B-Enterohepatic cycle
C-Incomplete absorption
D-Faulty manufacturing of the dosage form
E-All of the above

Ans :E

Bioavailability is :

A-The fraction of unchanged active drug reaching the systemic circulation, Following the drug administration; irrespective of the route.

B-The fraction of the metabolized drug in portal vein, gut wall and in the liver.

C-The amount of the drug eliminated form the body.

D-None of the above

Ans :A

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

A)Sublingual

B)Oral

c)Intravenous

d) Intramuscular

Ans :B

Which pharmacokinetic parameter best describes the overall exposure of the body to a drug?

A) Volume of distribution (Vd)

B) Clearance (Cl)

C) Area Under the Curve (AUC)

D) Half-life (t½)

Ans :C

In the administration of an intravenous (IV) drug, the C_{max} is reached instantaneously due to which of the following reasons?

A) No absorption is needed

B) The drug immediately undergoes metabolism

C) The distribution phase is neglected

D) Both A and C

Ans :D

Ans is written exactly as mentioned in the past files

Grapefruit juice may increase the bioavailability of cyclosporine. Which of the following is the most reasonable mechanism of this effect?

A-Reduction of distribution into tissues.
B-Enhancement of lipid solubility.
C-Inhibition of the efflux transporter, P-glycoprotein.
D-Reduction of plasma protein binding.
E-Prevention of renal excretion.

Ans :C

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

Ans :C

Bioavailability of 0.2 (or 20%) means:

A-Approximately 80% of the drug reaches the systemic circulation as intact drug

B-Approximately 20% of the drug reaches the systemic circulation as intact drug

C-The drug has 80% bioavailability when administered intravenously

D- Bioavailability is irrelevant to the route of administration

Ans :B

True about bioavailability:

A- Drugs are absorbed by all routes of extravascular (non-intravenous) administration

B-Only oral drugs have bioavailability

C-Bioavailability is the same regardless of the route of administration

D-Bioavailability is only relevant for intravenous drugs

Ans :A

Which of the following statements is true regarding the Area Under the Curve (AUC) in pharmacokinetics?

A) AUC represents the mathematically integrated area under the plasma concentration-time curve.

B) Two drugs with different concentration-time profile shapes can have the same AUC, indicating equivalent total drug exposure.

C) AUC is solely determined by the rate of drug absorption.

D) Both A and B

Ans :D

(2022)

First-pass effect refers to:

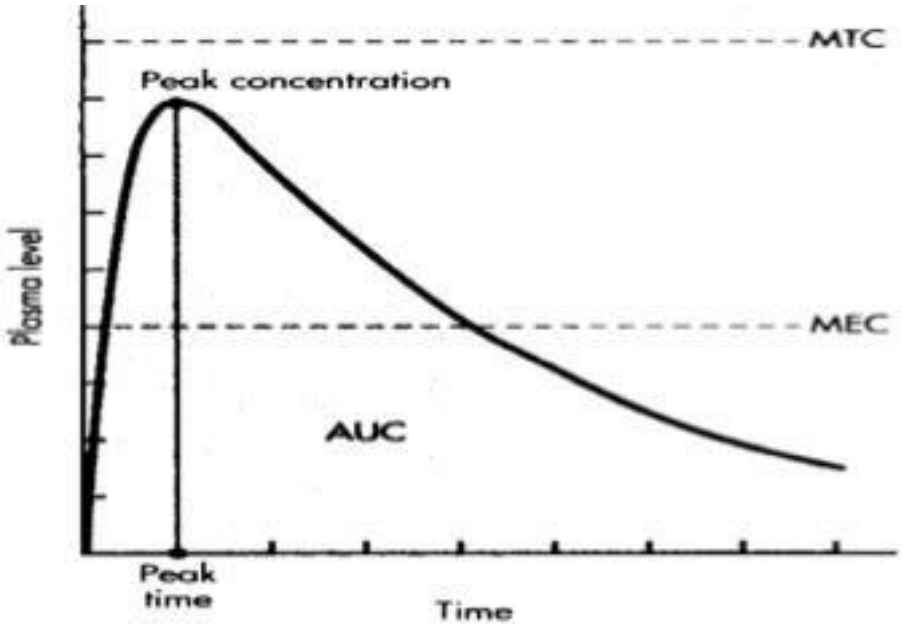
A. Enterohepatic circulation
B. Rapid metabolism

Ans: B

(2021)

Look carefully at this figure What is the route of administration used?

A. Oral
B. Rectal
C. Intravenous bolus injection
D. Intravenous infusion
E. Inhalation



Ans: A

(2020)

Not a component of first pass effect:

Answer: Metabolism by gut flora

(2020)

Which of the following is an enzyme inhibitor:

Answer: Grapefruit

Pharmacokinetics Pt3
Lecture 4

(2022)

If the apparent volume of distribution of a certain drug is 20 L and the dose given in milligrams is 100, calculate the concentration of the drug in plasma at time zero.

A. 0.5 mg/L
B. 0.05 mg/L
C. 5 mg/L
D. 0.2 mg/L
E. 2 mg/L

Ans: C

(2021)

Which is true about VD :

A. VD relates drug concentration in blood to total amount of drug in the body
B. VD is the actual physical volume occupied by the drug in the body
C. VD is typically higher for water-soluble drugs than for lipid-soluble drug
D. VD is only relevant for drugs that are eliminated via renal excretion
E. VD indicates the concentration of a drug at its target site in the body.

Not the exact exam choices

Ans: A

(2021)

A drug with a Volume of Distribution (VD) of 12 L is likely to distribute primarily into which of the following compartments?

A. Plasma only

B. plasma + interstitial fluid

C. Intracellular fluid

D. Total body water (intracellular + extracellular fluid)

E. Fat tissue

Ans: B

(2021)

True about VD :

A. Rough indication of overall distribution
B. Accurate indication of overall distribution
C. May indicate that the drug is sequestered at some extra vascular tissue

Ans: A+C

(2021)

Amiodarone has a Volume of Distribution (VD) of 4200 L in a 70 kg person. This indicates that it primarily distributes to which of the following tissues?

A. Plasma only

B. Extracellular fluid (plasma + interstitial fluid)

D. Liver, lung, adipose tissue, and eye

Not the exact exam choices

Ans: D

(2021)

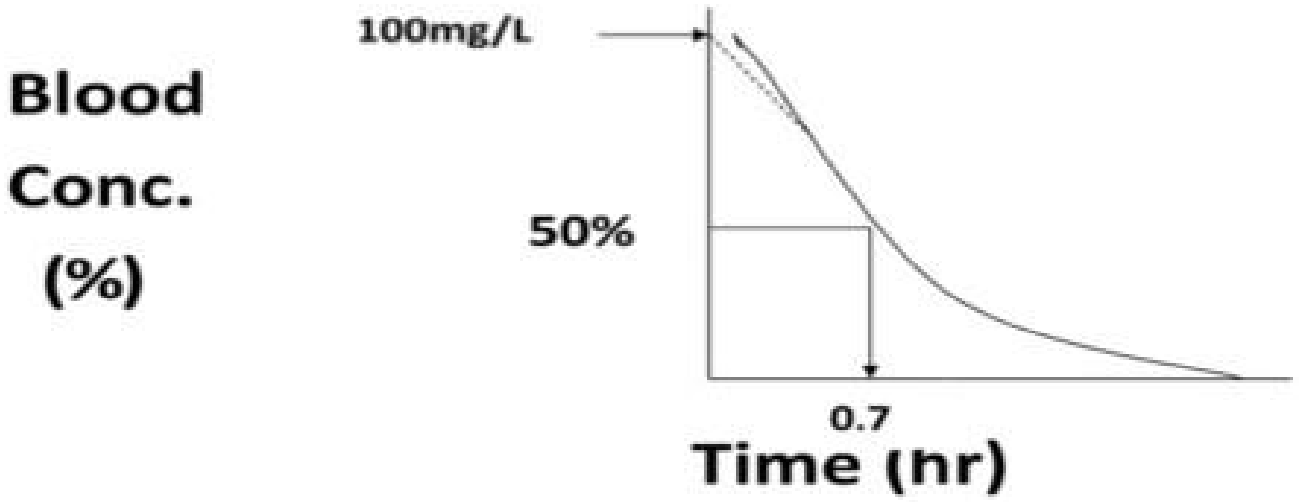
According to the previous graph, if the given dose is 100 mg, Calculate AVD:

A 1L

B. 1L^-1

C. 0.5 L

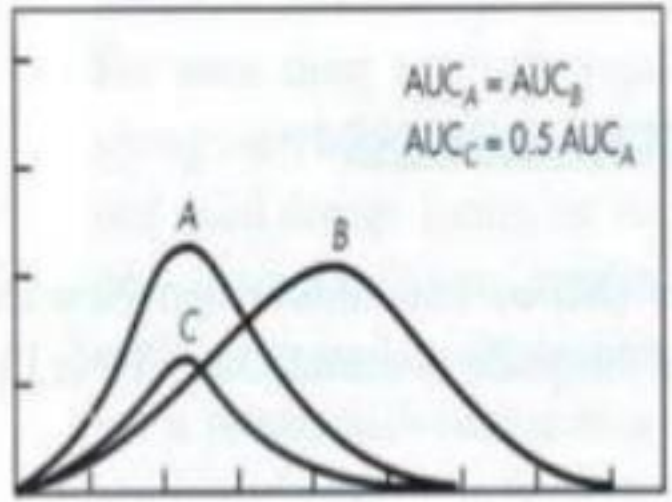
D. 0.5 L^-1



Ans: A

(2021)

One of the following is correct about these drugs that gives the same effect :



A. formulation A will have the same extent when compared With formulation C
B. formulation A will have the same rate when compared With formulation C
C. formulation A will have an earlier onset action when compared With formulation B
D. formulation A will have the same rate when compared With formulation B

Ans: B+C

(2021)

If a patient had an intravenous dose equal to 650mg , and the plasma concentration ofthe drug was 5mg / L , find the volume of distribution:

A. 13 L

B. 130 L

C. 1300 L

D. 1.3 L

Ans: B

(2021)

High volume of distribution means :

A. A.the drug is significantly distributed in the circulation.
B. The drug found in high concentrations in the body fluids
C. the drug is significantly distributed in the tissues.
D. The drug found in low concentrations in the body fluids
E. C+ D

Ans: E

(2020)

A 78-year-old woman is started on digoxin for her congestive heart failure (CHF).Her initial dose is 0.25 mg. The C0, obtained by extrapolation of the elimination-phase, is determined to be 0.05 mg/L. What is the patient's apparent volume of distribution?

A. 0.5 L
B. 0.2 L
C. 0.0125 L
D. 1L
E. 5 L

This is not the same question from the exam, this question is taken fromBRS Pharmacology but has the same idea.

Ans: E

(2020)

If the volume of distribution for Chloroquine is 13000L, you expect to find it:

A. In the blood
B. In the ECF
C. Bound to plasma proteins
D. Extensively bound to tissues

Ans: D

(2020)

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

A. extracellular fluid
B. Plasma
C. Total body water
D. A+ B

Ans :C

(2020)

High plasma protein binding

A. Increases 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

Ans: D

(2020)

A patient is treated with drug A, which has high affinity for albumin and is administered in amount that don't exceed the binding capacity of albumin, A second drug B also has high affinity for albumin but is administered in amounts that are 100 times the binding capacity of albumin. what happens after administering drug B?

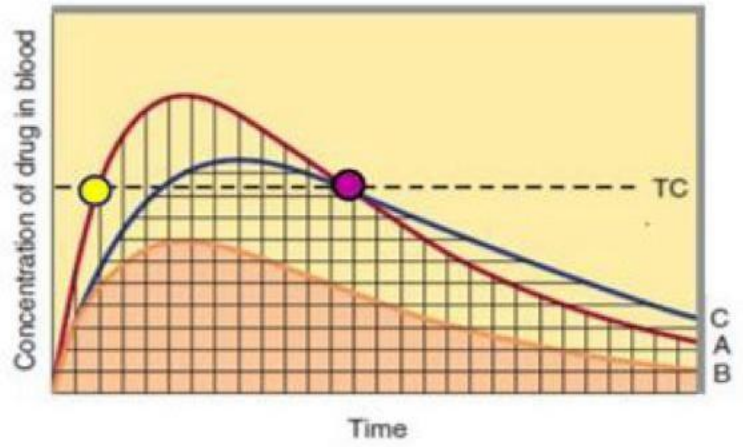
A. Increase tissue concentration of drug A
B. Increase serum concentration of unbound drug
C. Decrease tissue concentration of drug A
D. Decrease half-life of drug A

Ans: B

(2020)

Which of the following is true regarding the bioequivalence:

A. A & C are not bioequivalent
B. A produces effect faster then C
C. B Is bioequivalent to A
D. C produces effect faster then A



Ans: A+B

(2020)

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

Ans :C

(2019)

IF your patient is taking drug A and prescribe him drug B, after which he startto suffer from a side effect that known to be caused by drug A. Which of thefollowing is not a possible cause?

A. Drug B may displace drug A from the albumin binding site
B. Drug B enhanced the enzyme that responsible for drug A metabolism
C. Drug A and B are actively excreted from the same nephritic site.
D. Drug B has the same side effect
E. Drug B increase the absorption of drug A

Ans: B

(2019)

All of the following statements about plasma protein binding of a drug are true-except

A. Displacement of a drug from plasma protein binding sites makes more free drug-available for glomerular filtration
B. Drugs that are highly bound to plasma proteins generally have a greater VD compared with drugs that are highly bound to tissue proteins
C. Displacement of a potent drug that is normally more than 95% bound may cause toxicity
D. Displacement of a drug from plasma protein binding sites results in a transient increased volume of distribution (VD)
E. Albumin is the major protein involved in protein binding of drugs

Ans: B

(2019)

If your patient is elderly and has a reduction in total body water and increase in total body fat, in comparison with a normal adults, which of the following is incorrect?

A. For a fat soluble drug the concentration of the drug in the fat is usually higher than that in the normal patients.
B. For a water soluble drug, the half life is shorter.
C. For a water soluble drug the volume of distribution is higher.
D. For a water soluble drug the serum level is usually higher than that in the normal patients
E. For a fat soluble drug the half life is longer

Ans :C

Pharmacokinetics Pt4
Lecture 5

(2023)

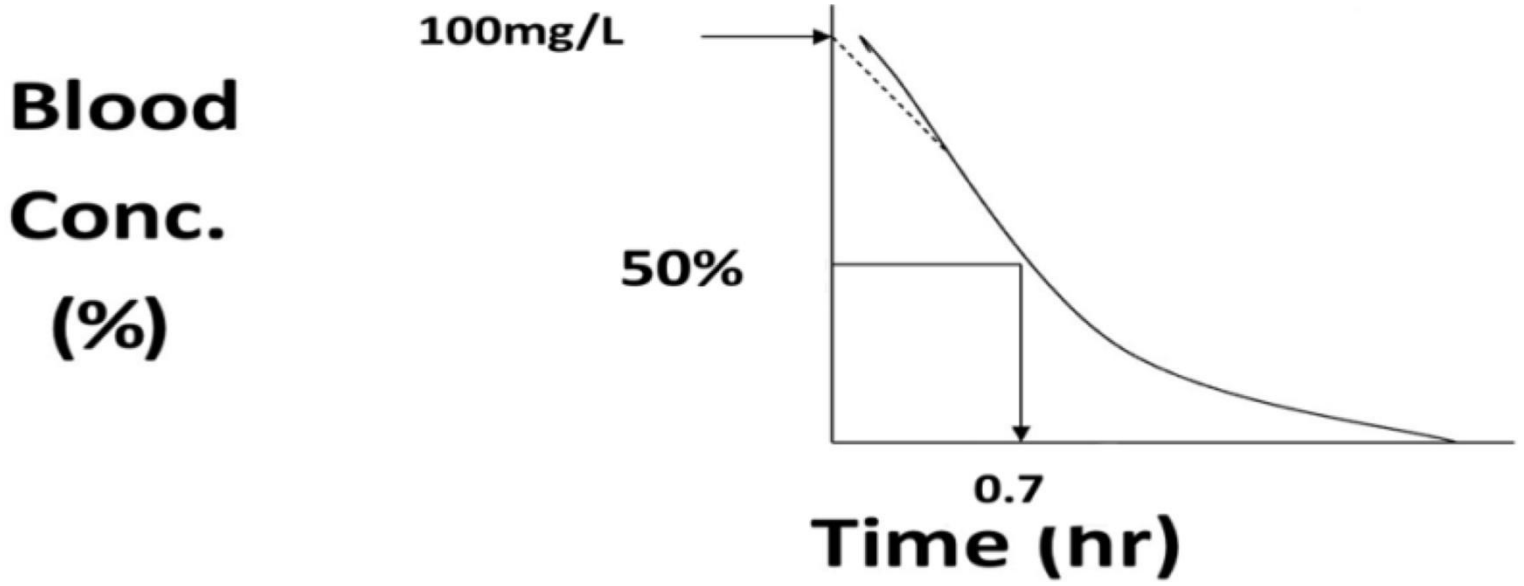
Based on this graph, When will the drug reach steady state?

A .2 hr

B. 5 hr

C. 3.5 hr

D. 4-5 hr



Answer:C

(2023)

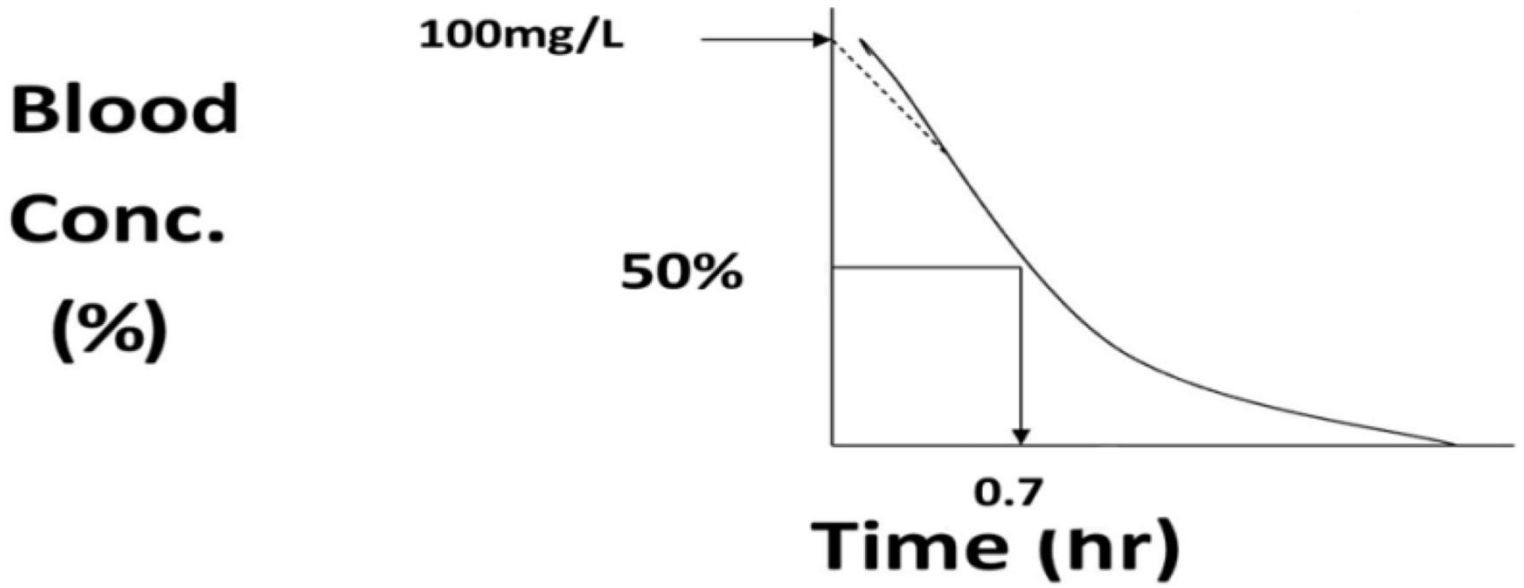
According to the previous graph, Calculate Ke (approximately)

A. 1hr

B. 0.1 hr

C. 1hr^-1

D. 0.1 hr^-1



Ans :C

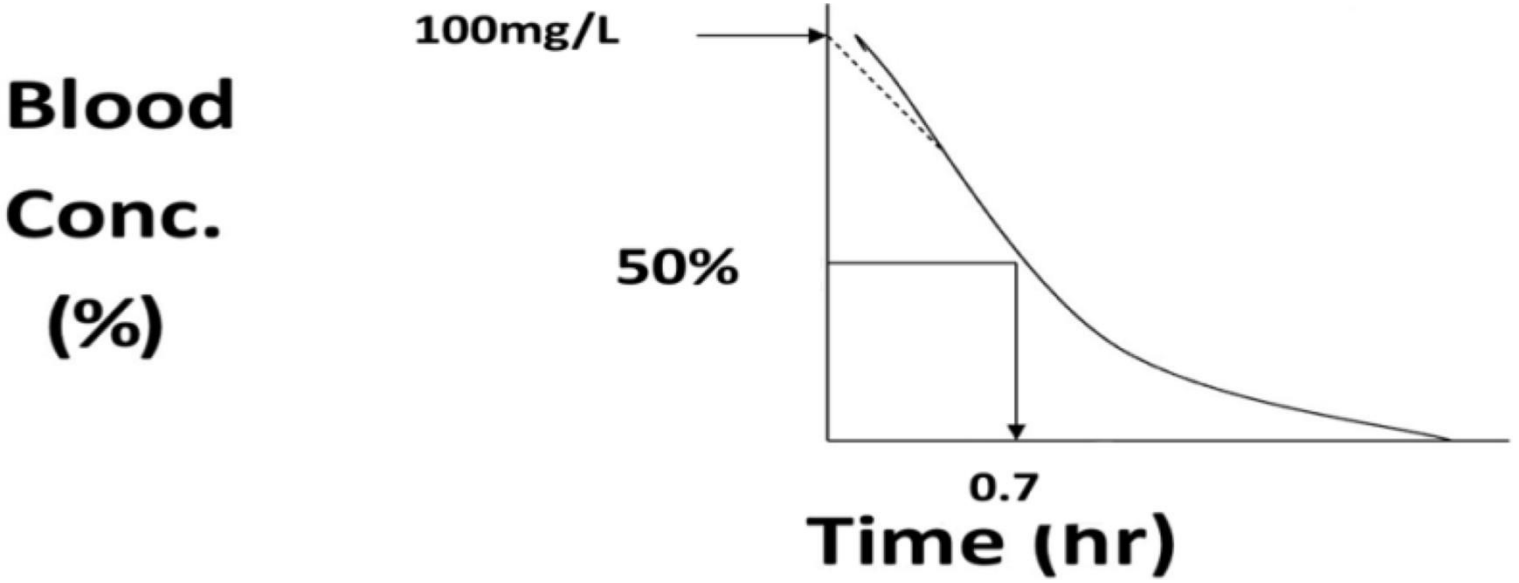
According to the previous graph, if the given dose is 100 mg, Calculate AVD:

A.1 L

B. 1L^-1

C. 0.5 L

D. 0.5 L^-1



Ans :A

Apparent Volume of distribution = dose/Cp

(2023)

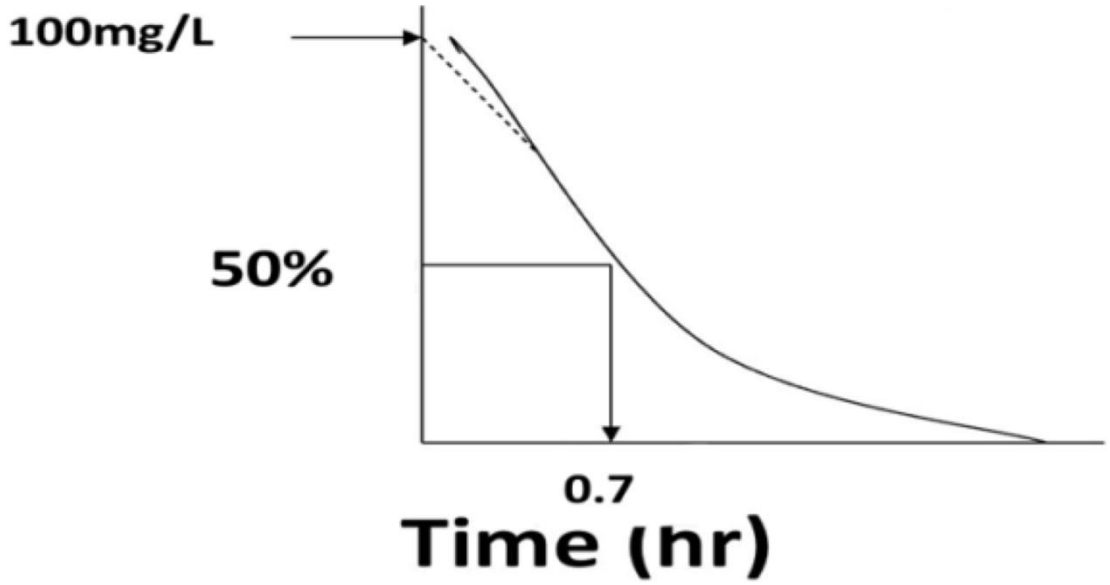
According to the previous graph, Calculate clearance:

A 1L/hr

B. B. 1hr/L

C. C. 0.5 L/hr

D. D. 0.5 hr/L



Ans :A

Clearance = K*Vd

(2022)

If the clearance of a drug was 20 L/hours and the volume of distribution was 200 L find the Half-life of the drug:

A. 7 hours

B. 1.7 hours

C. 170 hours

D. 3.5 hours

Ans :A
Clearance = K*Vd
K=0.693/T half

(2022)

The clearance is :

A. The removal of an administered drug from the body.
B. The passage of the drug to the liver before entering the systemic circulation.
C. the volume of blood or plasma that is completely cleared of drug per unit time.
D. The amount of the drug that reach the systemic circulation.

Ans :C

(2022)

Drugs eliminated by a constant fraction are:

A. Zero order eliminated drugs
B. First order eliminated drugs
C. Oral administered drugs
D. IV administered drugs

Ans :B

(2022)

For a drug with a half - life equal to 24 hours how many days are required to reach 93.75of steady state concentration

A. Three days
B. four days
C. Two days
D. One day

Ans :B

(2022)

One of the following is incorrect about steady state condition:

A. Occurs when The rate of the drug administration is equal to the rate of the drug elimination
B. Has an a constant peak , trough and constant drug concentration
C. 50% of SS condition achieved by a single dose
D. SS condition achieved by a single dose

Ans :D

(2022)

Which of the following is CORRECT?

A. Value of t (1/2) depends on rate of absorption
B. Increase in Kd of drug with plasma protein is associated with increase in T (1/2)
C. T (1/2) value is required for dose estimation
D. Drugs associated with short T (1/2) are characterized by low systemic clearance

Ans :C

(2022)

If 87.5% of a drug is eliminated via first order kinetics in 15 hours. Half-life of this drug is expected to be;

A. 5 hours

B. 10 hours

C. 15 hours

D. 30 hour

Ans :A

(2020)

Half-life of drug doesn't depend on:

A. Biotransformation
B. Time of drug absorption
C. Concentration of a drug in plasma
D. Rate of drug elimination

Ans :B

(2020)

A drug with half-life of 12 hours is administered Intravenously. how long will it take for the drug to reach 90% of its final steady state

A. 90hrs
B. 40hrs
C. 30hrs
D. 24hrs

Ans :B

(2020)

Drugs showing zero-order kinetics of elimination?

A. Are more common than those showing first order kinetics
B. Decrease in concentration exponentially with time
C. Amount of drug eliminated is independent of dose
D. Show constant fraction of the drug eliminated per unit time

Ans :C

(2020)

Which one of the following is true for a drug whose elimination from plasma shows first order kinetics?

A. Half-life is proportional to the drug concentration in plasma
B. The amount eliminated per unit of time is constant
C. A plot of drug concentration versus time is a straight line
D. The rate of elimination is proportional to the plasma concentration

Ans :D

(2019)

Loading doses are employed:

A. To decrease the drugs toxicity
B. To increase drug efficacy
C. To increase drug potency
D. To increase the half live of the drug
E. To reach drug steady state more rapidly

Ans :E

(2019)

Some drugs exhibit zero order kinetics at high doses because

A. Because they have a long half life
B. Because they are toxic at high dose
C. Because they have short half life
D. They have an elimination site that is saturable
E. Because they bound to circulating proteins

Ans :D

(2019)

The number of half-lives required to move from one steady-state drug level to94% of another steady-state level is about

A. Three drug half-lives
B. Four drug half-lives
C. Five drug half-lived
D. Two drug half-lives
E. One drug half-life

Ans :B

(2021)

Which of the following is correct about renal clearance:

A. It is primarily relevant for drugs that undergo significant hepatic metabolism.
B. Especially useful for drugs that are primarily eliminated by the kidney
C. It has limited application in determining dosage adjustments for drugs with extensive protein binding.
D. It provides minimal insight into the pharmacokinetics of drugs eliminated via biliary excretion.

Ans :B

Not the exact exam choices

(2021)

The Half life of the drug helps indicating which of the following:

A. The bioavailability of the drug after oral administration
B. The potency of the drug at receptor sites
C. The frequency at which the drug should be administered (dosage frequency)
D. The route of elimination (renal vs. hepatic) of the drug

Ans :C

Not the exact exam choices

(2020)

All of the following is true about drug metabolism EXCEPT?

A. pro-drug must be metabolised to their active forms
B. First-order kinetics metabolism means constant amount of drug is metabolised per unit time
C. In zero-order kinetics metabolism the enzyme is saturated
D. None of the above

Ans :B

(2020)

Ahmad is scheduled for an operation and he is using drug A that have a bad effect on such operation. If you know that drug A half live is 12 hours, Ahmad should stop drug A before

A. 10 days

B. 8 days

C. 6 days

D. 4 days

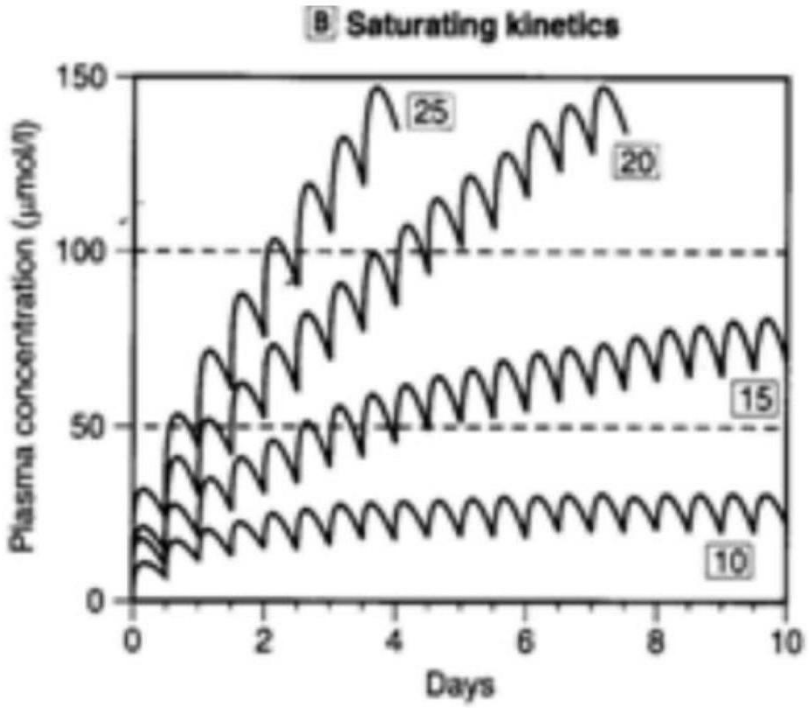
E. 2 days

Ans :E

(2020)

Which of the following statements is wrong?

A. The plot represents a zero order kinetics elimination
B. We reach the steady state at high dose faster
C. The drug is eliminated as constant amounts
D. This drug plot can be Aspirin's plot



Ans :B

Not the exact exam choices

This is not the same question from the exam but has the same idea.

Lippincott Question

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 be28.5 mg/L. The apparent volume of distribution is:

A 1L /Kg

B. 10 L/kg

C. 7 L/Kg

D. 70 L/ Kg

E. 14 L/Kg

Ans :A

This is not the same question from the exam but has the same idea.

Lippincott Question

A 55-year-old male patient (70 kg) is going to be treated with an experimental drug, Drug X, for an irregular heart rhythm. If the Vd is 1L/kg and the desired steady state plasma concentration is 2.5 mg/L, which of the following is the most appropriate intravenous loading dose for Drug X?

A. 175 mg.
B. 70 mg.
C. 28 mg.
D. 10 mg.
E 1mg

Ans :A

Administration of an IV loading dose to a patient of drug X yields an initial plasma concentration of 100 mcg/L. The table below illustrates the plasma concentration of X as a function of time after the initial loading dose:

Time (hours)	Plasma concentration (mcg/L)
0	100
1	50
5	25
9	12.5

What is the half-life (in hours) of drugs in hours?

A. 1

B. 2

C. 4

D. 5

E. 9

Inspection of the plasma concentration values indicates that the half-life of drug does not become constant until 1–9 hours after administration. The drug concentration decreases by 12 (from 50 to 25mcg/L) between 1 and 5 hours (a 4-hour interval) and again decreases by 12 (from 25 to 12.5 mcg/L)between 5 and 9 hours (again, a 4-hour interval). This indicates the half-life of the drug is 4 hours.The rapid decrease in plasma concentration between 0 and 1 hour, followed by a slower decrease there after (and the constant half-life thereafter) indicates that this drug obeys a two-compartment model with an initial distribution phase followed by an elimination phase. The half-life is always determined from the elimination phase data

Ans :C

Extra questions

Lecture 3

Extra question

Which principle is fundamental in pharmacology regarding drug concentration and its effects?

A) There is no direct relationship between drug concentration and effect

B) A drug's effect is only related to its dose, not its concentration

C) There is a direct relationship between drug concentration at the site of action and its beneficial or toxic effect

D) Therapeutic effect is independent of drug concentration

Ans :C

Extra question

Which formula correctly describes the relationship between bioavailability (F) and the extraction ratio (ER)?

A) $F = ER + 1$

B) $F = (f) - (1 + ER)$

C) $F = (f) . (1 - ER)$

D) $F = 1/ER$

Ans :C

Extra question

Active transport differs from facilitated transport in following ways, except:

A-Carrier is involved

B-It is against concentration gradient

C-Energy is required

D-All of the above

Ans :A

First pass metabolism:

A- Can increase the oral bio-availability of the drug

B-Occurs only in the liver

C-Is higher on intravenous administration

D-Necessitates high oral dose for certain drugs

Ans :D

Drug metabolism occurs chiefly in:

A- Liver

B- Brain

C- Spleen

D- Kidneys

Ans :A

Extra question

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

Drugs that are **incompletely absorbed** are particularly sensitive to differences in the oral formulation. These differences in formulation can affect how much of the drug is available for absorption, leading to variations in bioavailability.

Ans :C

Extra question

Which of the following is initial step for drug absorption in case of tablet dosage form?

A-Friability

B-Disintegration

C-Dissolution

D-None of these

Ans :B

Extra question

Which of the following factors would most likely reduce the impact of first-pass hepatic metabolism on a drug's bioavailability

A-Oral administration of the drug

B-Drinking grapefruit juice

C-High lipid solubility of the drug

D-None of these

Ans :B

Extra question

The first-pass hepatic elimination significantly affects the bioavailability of a drug by:

a) Decreasing the amount of drug available to the systemic circulation

b) Increasing the amount of drug available to the systemic circulation

c) Directly enhancing the drug's therapeutic effect

d) Preventing the drug from being metabolised

Ans :A

Drugs which undergo high degree of first-pass metabolism in liver:

A-Exhibit zero order kinetics of elimination

B-Have oral bioavailability

C-Are excreted primarily in bile

D-Are contraindicated in liver disease

Drugs with high first-pass metabolism are often contraindicated in liver disease because impaired liver function can lead to reduced drug metabolism. This can cause the drug to accumulate in the body, increasing the risk of toxicity.

Ans :D

Extra question

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-Adverse effect

Ans :D

Routes Of Administration
Biotransformation
Pharmacodynamics

Routes Of Administration
Lecture 6

(2022)

The most convenient route of administration:

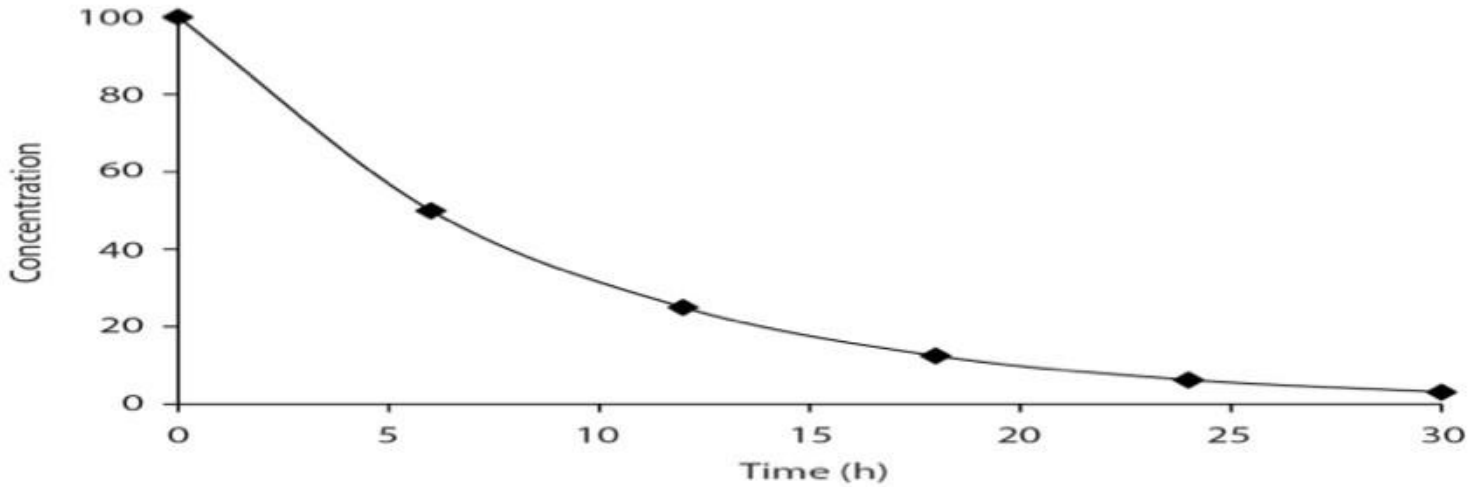
A. Intravenous
B. Oral
C. Transdermal
D. Rectal

Ans : B

(2022)

Based on this graph, What is the route of administration of this drug:

A. Oral
B. Intradermal
C. Intravenous
D. Intramascular



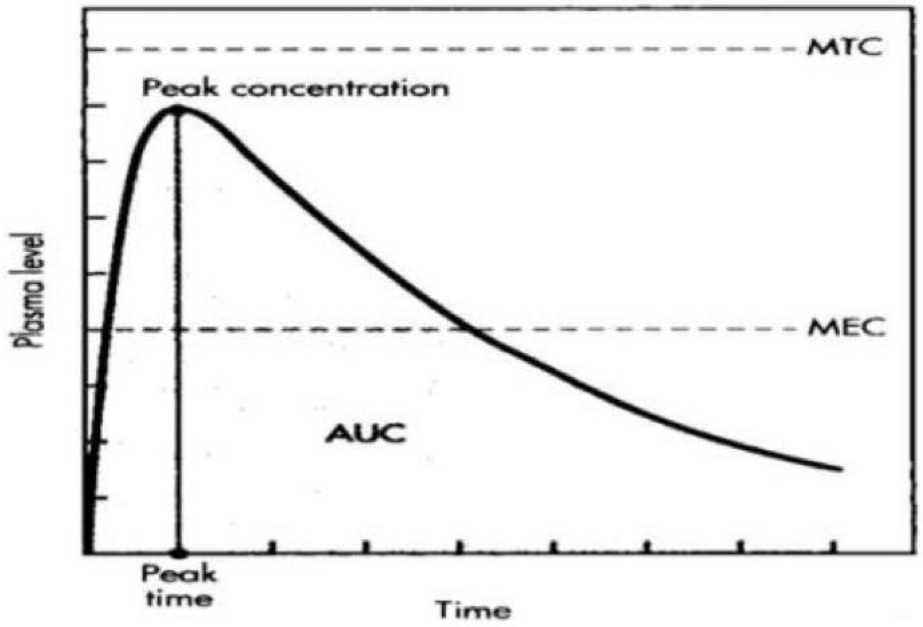
Ans : C

More specifically IV Bolus

(2021)

The route of drug administration in this picture:

A. rectal
B. Oral
C. Inhalation
D. Bolus Intravenous
E. infusion Intravenous

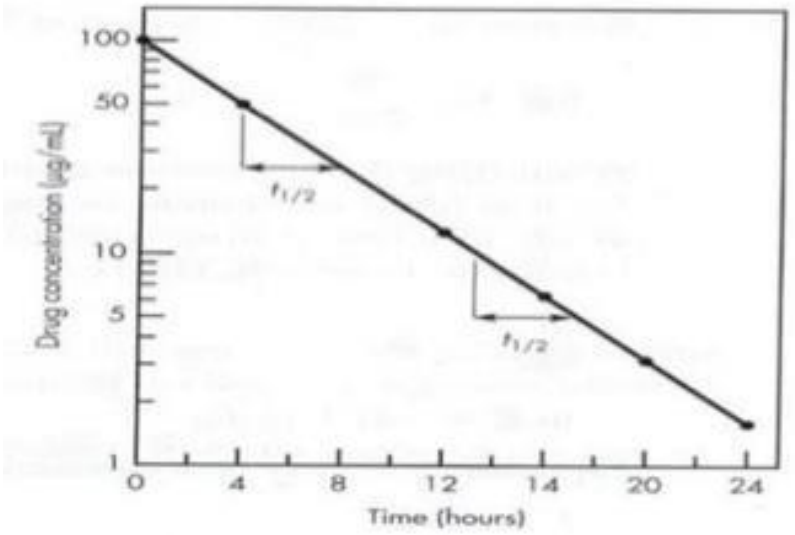


Ans : B

(2021)

The route of drug administration in this picture:

A. rectal
B. Oral
C. Inhalation
D. Bolus Intravenous
E. infusion Intravenous



Ans : D

(2021)

The safest way of drug administration:

A. Rectal
B. Oral
C. Inhalation
D. Bolus Intravenous
E. infusion Intravenous

Ans : B

(2021)

One of the following is a disadvantage of Intravenous drug administration:

A. Produce high initial concentration of the drug that might be toxic.
B. Rapid onset of action
C. No First pass effect
D. Can be corrected if high dose of the drug is given incorrectly.

Ans : A

(2020)

All of these routes of administration avoid first pass effect EXCEPT:

A. Rectal route
B. Transdermal route
C. Pulmonary route
D. Sublingual route
E. Intravenous route

Ans : A

(2020)

Oral administration is absorbed mainly in the:

A. Duodenum
B. Large intestines
C. Ileum
D. Jejunum

Ans : A

(2020)

Which of the following is not correct regarding IV drug administration?

A. IV administration provides 100% bioavailability.
B. Rapid drug effect is achieved with IV administration.
C. Oily vehicles should be given IV.
D. IV administration by passes first pass metabolism .

Ans : C

Not exact exam choices (AI generated ☺)

(2020)

Which of the following is not correct regarding IV drug administration?

A. IV administration provides 100% bioavailability.
B. Rapid drug effect is achieved with IV administration.
C. Oily vehicles should be given IV.
D. IV administration by passes first pass metabolism .

Ans : C

Not exact exam choices (AI generated ☺)

(2020)

The route of drug administration is determined by?

A. Water solubility of the drug
B. Ionization of the drug
C. Desirability of rapid onset of action of the drug
D. All of the above

Ans : D

(2020)

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

A. Oral
B. Transdermal
C. Rectal
D. Intraduodenal

Ans : D

(2020)

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

A. Sublingual
B. Oral
C. Intravenous
D. Intramuscular

Ans : B

(2020)

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

Ans : A

(2020)

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

Ans : C

رسالة من الفريق العلمي:

For any feedback, scan the code or click on it.

Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1			
V1 → V2			