Final Year B. Pharm (Sem VIII – CBSGS)

Subject: Biopharmaceutics and Pharmacokinetics

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Practice Question Set

1. The rate of drug transport across a cell membrane by lipid diffusion depends on all of the following EXCEPT:
    a. Drug size (diffusion constant)
    b. Surface area of absorption
    c. Concentration gradient
    d. Efflux transporters
2. The major mechanism of drug transport is:
    a. Receptor-mediated endocytosis
    b. Passive diffusion
    c. Active transport
    d. Facilitated transport
3. Drug administered through the following route is most likely to be subjected to first-pass metabolism:
    a. Oral
    b. Sublingual
    c. Subcutaneous
    d. Rectal
4. Diffusion of drugs across cell membrane:
    a. Is dependent upon metabolic activity of the cell
    b. Is competitively inhibited by chemically related drugs
    c. Is affected by extent of ionization of drug molecules
    d. Exhibits saturation kinetics
5. Active transport of a substance across biological membranes has the following characteristics except:
    a. It is structure specific
    b. It is pH dependent
    c. It is saturable
    d. It requires metabolic energy
6. Bioavailability of drug refers to:
    a. Percentage of administered 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
7. If the total amount of a drug present in the body at a given moment is 2.0 g and its plasma concentration is 25 μg/ml, its volume of distribution is:
    a. 100 L
    b. 80 L
    c. 60 L
    d. 40 L

8. The following attribute of a drug tends to reduce its volume of distribution:
    a. High lipid solubility
    b. Low ionisation at physiological pH values
    c. High plasma protein binding
    d. High tissue binding
9. The blood-brain barrier, which restricts entry of many drugs into brain, is constituted by:
    a. P-glycoprotein efflux carriers in brain capillary cells
    b. Tight junctions between endothelial cells of brain capillaries
    c. Enzymes present in brain capillary walls
    d. All of the above
10. Weakly basic drugs:
    a. Are bound primarily to α1 acid glycoprotein in plasma
    b. Are excreted faster in alkaline urine
    c. Are highly ionized in the intestinal medium
    d. Do not cross blood-brain barrier
11. Biotransformation of drugs is primarily directed to:
    a. Activate the drug
    b. Inactivate the drug
    c. Convert lipid soluble drugs into nonlipid soluble metabolites
    d. Convert nonlipid soluble drugs into lipid soluble metabolites
12. The most commonly occurring conjugation reaction for drugs and their metabolites is:
    a. Glucuronidation
    b. Acetylation
    c. Methylation
    d. Glutathione conjugation
13. Induction of drug metabolizing enzymes involves:
    a. A conformational change in the enzyme protein to favour binding of substrate molecules
    b. Expression of enzyme molecules on the surface of hepatocytes
    c. Enhanced transport of substrate molecules into hepatocytes
    d. Increased synthesis of enzyme protein
14. Select the drug that undergoes extensive first-pass metabolism in the liver:
    a. Phenobarbitone
    b. Propranolol
    c. Phenylbutazone
    d. Theophylline
15. If a drug undergoes net tubular secretion, its renal clearance will be:
    a. More than the glomerular filtration rate
    b. Equal to the glomerular filtration rate
    c. Less than the glomerular filtration rate
    d. Both are not related
16. Decrease in particle size has what effect on solubility of drug
    a. Increases the solubility
    b. Does not increase solubility
    c. Solubility may or may not be increased
    d. There is no effect at all

17. The type IV dissolution apparatus as per USP is:
    a. Flow through cell
    b. Paddle over disc
    c. Rotating disk
    d. Paddle apparatus
18. The most probable unit for elimination rate constant is:
    a. mg/ml
    b. liter
    c. mg.hr/l
    d. hr^{-1}
19. Which of the following can be a technique to compute absorption rate constant for drugs given by extravascular route?
    a. Noyes-Whitney method
    b. Wagner-Nelson method
    c. Hixom-Crowell method
    d. Korsmeyer-Peppas method
20. Which of the following is the model independent approach to determine pharmacokinetic parameters?
    a. Compartment model
    b. Physiological model
    c. Distributed parameter model
    d. Non-compartmental analysis
21. BCS Class III molecules have
    a. High solubility low permeability
    b. Low solubility low permeability
    c. Low solubility high permeability
    d. High solubility high permeability
22. Water soluble drugs having molecular weight less than 100 follow which mode of transport predominantly?
    a. Passive diffusion
    b. Pore transport
    c. Active transport
    d. Endocytosis
23. Example of a drug having a pKa>11 is:
    a. Cromolyn
    b. Imipramine
    c. Amitriptyline
    d. Mecamylamine
24. Which form of drug amongst the following has the greatest aqueous solubility?
    a. Anhydrous
    b. Monohydrate
    c. Crystalline
    d. Solvate
25. Which of the following organs have the highest perfusion rate?
    a. Adipose tissue
    b. Muscle and skin
    c. Bones
    d. Lungs and kidney