

Advanced Pharmacology Fundamentals

Pharmacology · Answer Key · 18 Questions

1. Which enzyme is primarily responsible for the Phase I metabolism of the majority of clinical drugs in the human liver?

- A) Cytochrome P450**
- B) Alcohol dehydrogenase
- C) Monoamine oxidase
- D) Acetylcholinesterase

2. What is the formal definition of the 'therapeutic index' of a pharmaceutical agent?

- A) The ratio of the median toxic dose to the median effective dose**
- B) The time taken for drug concentration to decrease by half
- C) The total volume of body fluid into which a drug is distributed
- D) The maximum effect a drug can produce regardless of dose

3. Which class of drugs acts as an antagonist at the H2 receptors in the stomach to reduce gastric acid secretion?

- A) Proton pump inhibitors
- B) H2-receptor antagonists**
- C) Antacids
- D) Prostaglandin analogs

4. What is the primary mechanism of action for the class of antibiotics known as fluoroquinolones?

- A) Inhibition of bacterial cell wall synthesis
- B) Inhibition of DNA gyrase and topoisomerase IV**
- C) Disruption of ribosomal 30S subunit protein synthesis
- D) Inhibition of folic acid synthesis

5. Which pharmacokinetic parameter describes the volume of plasma cleared of a drug per unit of time?

- A) Bioavailability
- B) Volume of distribution
- C) Clearance**
- D) Half-life

6. What physiological change occurs when a drug acts as an agonist at the beta-1 adrenergic receptors in the heart?

- A) Decreased heart rate
- B) Increased cardiac contractility**
- C) Peripheral vasodilation
- D) Bronchoconstriction

7. Which medication is classified as an ACE inhibitor, commonly used to treat hypertension?

- A) Lisinopril**
- B) Amlodipine
- C) Losartan
- D) Metoprolol

8. What term refers to the decrease in pharmacological response to a drug after repeated administration over time?

- A) Tachyphylaxis
- B) Tolerance**
- C) Addiction
- D) Potentiation

9. Which drug delivery route completely avoids the 'first-pass metabolism' effect?

- A) Oral
- B) Intravenous**
- C) Rectal
- D) Intramuscular

10. What is the specific target site for the action of benzodiazepines in the central nervous system?

- A) GABA-A receptor complex**
- B) NMDA receptor
- C) Dopamine D2 receptor
- D) Serotonin 5-HT1A receptor

11. Which antibiotic class is strictly contraindicated in children due to the risk of permanent tooth discoloration and enamel hypoplasia?

- A) Penicillins
- B) Tetracyclines**
- C) Macrolides
- D) Aminoglycosides

12. What is the primary effect of inhibiting the enzyme cyclooxygenase (COX) by non-steroidal anti-inflammatory drugs (NSAIDs)?

A) Inhibition of prostaglandin synthesis

- B) Increased histamine release
- C) Degradation of cortisol
- D) Stimulation of thromboxane production

13. Which term describes the concentration of a drug required to produce 50% of its maximal effect?

- A) LD50
- B) ED50

C) EC50

- D) Kd

14. What is the primary site of action for thiazide diuretics in the nephron of the kidney?

- A) Proximal convoluted tubule
- B) Loop of Henle

C) Distal convoluted tubule

- D) Collecting duct

15. Which hormone is synthesized by the adrenal cortex and is the structural precursor for endogenous glucocorticoids?

A) Cholesterol

- B) Insulin
- C) Thyroxine
- D) Adrenaline

16. What is the primary mechanism by which local anesthetics like lidocaine induce anesthesia?

- A) Binding to potassium channels

B) Blocking sodium channels

- C) Inhibiting calcium influx
- D) Stimulating GABA receptors

17. Which medication is a selective serotonin reuptake inhibitor (SSRI) used primarily in the treatment of clinical depression?

A) Fluoxetine

- B) Amitriptyline
- C) Diazepam
- D) Haloperidol

18. What characterizes the pharmacological property known as 'bioavailability'?

A) The extent to which a drug reaches systemic circulation

B) The rate of drug excretion by the kidneys

C) The speed of drug absorption from the gut

D) The protein-binding percentage of the drug