

Pharmacodynamics Test Bank 1

- 1. Which of the following is a key concept in pharmacodynamics?**
 - a) Drug absorption
 - b) Drug-receptor interactions
 - c) Drug excretion
 - d) Drug metabolism

- 2. Which type of receptor does morphine primarily act on to relieve pain?**
 - a) Ion channel receptors
 - b) Enzyme-linked receptors
 - c) G-protein coupled receptors (GPCRs)
 - d) Intracellular receptors

- 3. What is the correct definition of an agonist?**
 - a) A drug that binds to a receptor but does not activate it
 - b) A drug that binds to a receptor and activates it
 - c) A drug that inhibits receptor activation by another molecule
 - d) A drug that partially activates a receptor

- 4. Which factor primarily affects a drug's potency?**
 - a) The drug's maximum efficacy
 - b) The strength of drug-receptor binding (affinity)
 - c) The speed of drug excretion
 - d) The therapeutic index

5. Which of the following drugs has a narrow therapeutic index (TI)?

- a) Penicillin
- b) Paracetamol
- c) Warfarin
- d) Ibuprofen

6. What is the role of an antagonist?

- a) It enhances the action of an agonist.
- b) It blocks the receptor without activating it.
- c) It partially activates the receptor.
- d) It binds to non-receptor targets.

7. What is the term for the smallest dose that produces an effect?

- a) Maximum efficacy
- b) Threshold dose
- c) Potency
- d) Therapeutic window

8. Which type of receptor do steroid hormones typically bind to?

- a) Ion channel receptors
- b) G-protein coupled receptors (GPCRs)
- c) Enzyme-linked receptors
- d) Intracellular receptors

9. Which of the following defines a partial agonist?

- a) A drug that binds to a receptor and fully activates it.
- b) A drug that binds to a receptor and blocks its activation.
- c) A drug that binds to a receptor and partially activates it.
- d) A drug that enhances the effect of another drug.

10. The therapeutic window refers to:

- a) The time it takes for a drug to reach its maximum effect.
- b) The range of doses that produces a therapeutic response without causing significant adverse effects.
- c) The ratio between the toxic dose and the lethal dose of a drug.
- d) The amount of drug required to cause toxicity in 50% of the population.

11. Which of the following best defines a receptor in pharmacodynamics?

- a) A protein that metabolizes the drug
- b) A protein that binds to a drug and initiates a biological response
- c) A molecule that transports the drug in the blood
- d) A molecule that excretes the drug

12. What is the term used to describe the strength of binding between a drug and its receptor?

- a) Potency
- b) Efficacy
- c) Affinity
- d) Therapeutic Index

13. A drug that binds to a receptor and fully activates it is known as:

- a) An antagonist
- b) A partial agonist
- c) An agonist
- d) A competitive inhibitor

14. What kind of receptor does insulin primarily bind to in order to exert its effects?

- a) Ion channel receptor
- b) G-protein coupled receptor
- c) Enzyme-linked receptor
- d) Intracellular receptor

15. Which of the following describes a drug with a narrow therapeutic index (TI)?

- a) The drug is highly potent
- b) The drug has a wide safety margin
- c) The difference between the therapeutic and toxic dose is small
- d) The drug is metabolized quickly

16. Which of the following drugs is an example of a beta-blocker that lowers blood pressure by blocking adrenergic receptors?

- a) Insulin
- b) Metoprolol
- c) Warfarin
- d) Buprenorphine

17. Which is correct regarding the safety of using Warfarin versus Penicillin?

- a) Warfarin is a safer drug because it has a low therapeutic index.
- b) Warfarin treatment has a high chance of resulting in dangerous adverse effects if bioavailability is altered.
- c) The high therapeutic index makes Penicillin a safe drug for all patients.
- d) Penicillin treatment has a high chance of causing dangerous adverse effects if bioavailability is altered.

18. If 1 mg of lorazepam produces the same anxiolytic response as 10 mg of diazepam, which is correct?

- a) Lorazepam is more potent than Diazepam.
- b) Lorazepam is more efficacious than Diazepam.
- c) Lorazepam is a full agonist, and Diazepam is a partial agonist.
- d) Lorazepam is a better drug to take for anxiety than is Diazepam.

19. If 10 mg of Oxycodone produces a greater analgesic response than does Aspirin at any dose, which is correct?

- a) Oxycodone is more efficacious than is Aspirin.
- b) Oxycodone is less potent than is Aspirin.
- c) Aspirin is a full agonist, and Oxycodone is a partial agonist.
- d) Oxycodone and Aspirin act on the same drug target.

20. A 36-year-old woman is admitted to the hospital because of irritability, nausea, and diarrhea. She has a history of recreational oxycodone use and last took a dose 48 hours ago. Physical examination shows mydriasis, rhinorrhea, and piloerection. A drug is administered that provides an effect similar to oxycodone but does not cause euphoria. Which of the following best explains the difference in effect?

- a) Lower bioavailability
- b) Lower efficacy
- c) Lower potency
- d) Lower tolerance

21. A 45-year-old man with chronic hypertension is prescribed metoprolol, a beta-blocker. After several weeks of treatment, he reports that his blood pressure has improved but he is experiencing fatigue and a slow heart rate.

Question:

What is the most likely reason for the patient's fatigue and slow heart rate?

- a) Increased affinity of metoprolol for alpha-adrenergic receptors
- b) Decreased cardiac output due to beta-adrenergic receptor blockade
- c) Excessive stimulation of beta-adrenergic receptors by metoprolol
- d) Increased activation of ion channel receptors in cardiac tissue

22. A 35-year-old patient is prescribed buprenorphine, a partial agonist, to manage opioid withdrawal. However, he reports only partial relief from withdrawal symptoms compared to a previous treatment with a full opioid agonist.

Question:

Why might buprenorphine provide only partial relief for this patient?

- a) Buprenorphine has a lower therapeutic index compared to full agonists.
- b) Buprenorphine produces a lower maximal effect than a full agonist like morphine.
- c) Buprenorphine has a stronger affinity for opioid receptors than full agonists.
- d) Buprenorphine completely blocks the opioid receptors, causing withdrawal symptoms.

23. A 50-year-old man with type 2 diabetes is prescribed insulin to improve glucose uptake in his cells. After taking insulin, his blood glucose levels drop significantly, and he begins to feel shaky and dizzy.

Question:

What is the most likely pharmacodynamic mechanism by which insulin caused the drop in blood glucose?

- a) Insulin inhibits glucose metabolism in the liver.
- b) Insulin binds to enzyme-linked receptors on muscle and fat cells, promoting glucose uptake.
- c) Insulin activates G-protein coupled receptors in the pancreas, increasing insulin release.
- d) Insulin stimulates intracellular receptors to block glucose absorption in the intestines.

Answers:

1	2	3	4	5	6	7	8
B	C	B	B	C	B	B	D
9	10	11	12	13	14	15	16
C	B	B	C	C	C	C	B
17	18	19	20	21	22	23	
B	A	A	B	B	B	B	

