Focus on Pharmacology Essentials for Health Professionals 3rd edition Moini Test Bank

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Focus on Pharmacology: Essentials for Health Professionals, 3e **(Moini)**
Chapter 2 Pharmacodynamics

1) The pharmacologic actions of a drug that determine its therapeutic effects are called:
A) pharmacology
B) pharmacokinetics
C) pharmacognosy
D) pharmacodynamics
Answer: D
Explanation: D) The pharmacologic actions of a drug that determine its therapeutic effects are called pharmacodynamics, which can also determine the drug's adverse effects. The term pharmacodynamics describes how a medication causes changes in the body. It studies the biochemical as well as the physiologic effects of drugs, along with the molecular mechanisms used to produce these effects.

2) Which of the following body fluids is the most commonly used to characterize pharmacologic drug actions?
A) Urine
B) Cerebrospinal fluid
C) Blood
D) Sputum
Answer: C
Explanation: C) Blood is the body fluid most commonly used to characterize pharmacologic drug actions. Usually, there are correlations between pharmacokinetics and pharmacodynamics that demonstrate the relationship between drug dose and blood or other biological fluid concentrations.

3) Which of the following can determine the dose-effect relationship?
A) Pharmacokinetics
B) Pharmacodynamics
C) Both
D) Neither
Answer: C
Explanation: C) Both pharmacokinetics and pharmacodynamics can determine the dose-effect relationship, which is also called the dose-response relationship. It is the relationship between the dose of a drug (or other agent) that produces therapeutic effects and the potency of the effects on an individual person.

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4) Which of the following represents the number of patients that respond to the actions of a drug?
A) Frequency distribution curve
B) Median effective dose
C) Dose-effect relationship
D) Median lethal dose
Answer: A
Explanation: A) The frequency distribution curve represents the number of patients that respond to the actions of a drug. It represents the number of patients that respond to the actions of a drug at different doses. A few patients are shown to have responded to a medication at very low doses, whereas increasing numbers of patients responded as the dosage was increased.

5) Where are intracellular receptors located?
A) in the mitochondrion
B) in the cytoplasm
C) in the nucleus
D) in the ribosomes
Answer: B
Explanation: B) The intracellular receptors are located in the cytoplasm. Some drugs act on these receptors, including corticosteroids and thyroid hormone.

6) Drugs must _____ before being absorbed.
A) be diluted
B) circulate
C) be compounded
D) dissolve
Answer: D
Explanation: D) Drugs must dissolve before being absorbed. Then, they are able to pass through the small intestine and enter the blood circulation. Some of these drugs are absorbed and metabolized before reaching the site of action. The factors that may influence the onset, duration, and intensity of drug effects include absorption, metabolism, reabsorption, excretion, site of action, and observed response.

7) A drug's potency does NOT indicate anything about which of the following?
A) tolerance
B) target molecules
C) affinity
D) maximal efficacy
Answer: D
Explanation: D) A drug's potency does not indicate anything about its maximal efficacy. This term describes the largest effect that a drug can produce.

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8) An example of a toxic agent in which a small dose causes drowsiness, but a large dose can be fatal is:
A) carbon monoxide
B) sulfuric acid
C) hydrochloric acid
D) carbon dioxide
Answer: A
Explanation: A) Carbon monoxide is a toxic agent in which a small dose causes drowsiness, but a large dose can be fatal. None of the answer choices have these effects.

9) A drug that blocks the effects of another substance is called which of the following?
A) stimulant
B) depressant
C) antagonist
D) potentiator
Answer: C
Explanation: C) An antagonism is a drug that blocks the effects of another substance. It can also be another agent, and can also block functions. Antagonists are often used when treating overdoses.

10) The amount of medication needed to produce a specific response in 50% of patients is called the:
A) frequency distribution curve
B) median effective dose
C) maximal efficacy drug
D) dose-effect relationship
Answer: B
Explanation: B) The amount of medication needed to produce a specific response in 50% of patients is called the median effective dose. It appears at the top of the frequency distribution curve of a drug, which indicates if a measurable response occurred in the test group of patients. The median effective dose is abbreviated as "ED_{50}".

11) The therapeutic index of a drug is used to predict whether a certain:
A) drug has any side effects
B) dosage is toxic for pregnant women
C) dosage is safe for a specific patient
D) dosage is lethal for a specific patient
Answer: C
Explanation: C) The therapeutic index of a drug is used to predict whether a certain dosage is safe for a specific patient. Like the median effective dose, frequency distribution curves are also used to determine the median lethal dose (LD_{50}) of a drug during preclinical trials. The therapeutic index is calculated by dividing the LD_{50} by the median effective dose (ED_{50}).

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12) The higher the value of the therapeutic index,
A) the safer the medication is to use
B) the cheaper the drug may be, and still be effective
C) means that the safety of the medication is uncertain
D) the less effective a generic drug will be compared to a trade name drug
Answer: A
Explanation: A) The higher the value of the therapeutic index, the safer the medication is to use. A larger therapeutic index means that the difference between the median lethal dose and median effective dose is larger.

13) The affinity for a target receptor is its:
A) transcription factor
B) enzyme activation
C) target molecule
D) attractive force
Answer: D
Explanation: D) The affinity for a target receptor is its attractive force. The cell recipient is known as a receptor — usually a specific protein — situated in cell membranes on cell surfaces. Intracellular receptors are located within the cellular cytoplasm.

14) Which of the following are NOT triggers of second-messenger events?
A) B-complex vitamins
B) Retinoids
C) Steroid agents
D) Hormones
Answer: A
Explanation: A) B-complex vitamins are not triggers of second-messenger events. Once bound to a receptor, a drug may trigger these events inside cells. Examples include release of intracellular calcium, activation of enzymes and specific G proteins, and conversion of adenosine triphosphate (ATP) to cyclic adenosine monophosphate (cyclic AMP). The agents that bind intracellular components include hormones, steroid medications, retinoids, and vitamin D.

15) Which of the following are NOT included in the four primary drug-receptor families?
A) Ligand-gated ion channels
B) G protein-coupled receptor systems
C) Antagonists
D) Transcription factors
Answer: C
Explanation: C) Antagonists are NOT included in the four primary drug-receptor families. They are drugs or other agents that block or antagonize the effects of other substances or functions. The four primary drug-receptor families include: enzymes embedded in cell membranes, ligand-gated ion channels, G protein-coupled receptor systems, and transcription factors.

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16) Which of the following are examples of agonist-antagonists?
A) dobutamine and insulin
B) pentazocine and meperidine
C) norethindrone and dobutamine
D) antihistamine and naloxone
Answer: B
Explanation: B) Pentazocine and meperidine are examples of agonist-antagonists, which are agonists that produce weaker or less effective responses than endogenous chemicals. They are also known as partial agonists, and have only slight intrinsic activity. Pentazocine has much lower pain-relieving actions than a full agonist such as meperidine.

17) Transcription factors are located in the:
A) cell nucleus
B) cell membrane
C) mitochondria
D) cytoplasm
Answer: A
Explanation: A) Transcription factors are located in the cell nucleus, on deoxyribonucleic acid (DNA). They regulate protein synthesis with delayed responses. Activation required highly lipid-soluble cell membrane ligands. Examples include thyroid hormone and all steroid hormones.

18) Which of the following is NOT a substance that utilizes a G protein-coupled receptor system?
A) serotonin
B) histamine
C) testosterone
D) norepinephrine
Answer: C
Explanation: C) Testosterone is NOT a substance that utilizes a G protein-coupled receptor system. Instead, it utilizes transcription factors for its actions. Examples of substances that do use G protein-coupled receptor systems include norepinephrine, histamine, serotonin, and many peptide hormones.

19) Which of the following in an enzyme embedded in cell membranes?
A) insulin
B) acetylcholine
C) gamma-aminobutyric acid
D) serotonin
Answer: A
Explanation: A) Insulin is an enzyme embedded in cell membranes. The ligand-binding domain is where drug and endogenous regulatory molecule binding occurs. It is on the cell surface, and catalytic sites of the enzymes are inside.

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20) Which of the following is NOT true regarding a median toxicity dose?
A) It produces a given toxicity in 50% of patients.
B) It is determined from animal testing data.
C) It cannot be tested in humans.
D) It determines adverse effects occurring during patient clinical trials.
Answer: C
Explanation: C) A median toxicity dose *can* be tested in humans, so answer choice "C" is NOT true. The median toxicity dose is the dose that produces a given toxicity in 50% of patients, and can be determined from animal testing data or because of adverse effects occurring during patient clinical trials.

21) Which of the following is a component of nonspecific cellular responses?
A) osmotic diuretic
B) insulin
C) acetylcholine
D) progesterone
Answer: A
Explanation: A) An osmotic diuretic is a component of nonspecific cellular responses. Other agents that work via these responses include general anesthetics and ethyl alcohol. All of these agents act independently of cellular receptors by either changing cellular membrane permeability, by changing how cellular pumps work, or by depressing membrane excitability.

22) A drug that binds to a receptor, and produces a stimulatory response that is similar to what an endogenous substance would have done if it were bound to the receptor is known as a(n):
A) receptor
B) agonist
C) antagonist
D) agonist-antagonist
Answer: B
Explanation: B) An agonist is a drug that binds to a receptor, and produces a stimulatory response that is similar to what an endogenous substance would have done if it were bound to the receptor. For example, adrenaline is an agonist at beta-adrenoceptors. When adrenaline binds to beta-adrenoceptors in the heart, the heart rate increases. Agonists drugs have affinity, which allows them to bind to receptors, as well as high intrinsic activity, which allows them to activate the functions of receptors.

23) Which of the following is a true statement regarding antagonists?
A) Combining two antibiotics may increase each drug's effects.
B) All antagonists produce a stimulatory response that is similar to what an endogenous substances produces.
C) They have affinity and high intrinsic activity.
D) All antagonists are associated with receptors.
Answer: D
Explanation: D) It is true that all antagonists are associated with receptors. They often compete with agonists for their receptor binding sites. However, they have almost no effects upon receptor function on their own. If no agonist is present, an administered antagonist will have no observable effect.

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24) Competitive antagonists are also referred to as:
A) surmountable antagonists
B) insurmountable antagonists
C) agonist-antagonists
D) partial agonists
Answer: A
Explanation: A) Competitive antagonists are also referred to as surmountable antagonists. The majority of antagonists are classified as competitive antagonists. They bind reversible to receptors, producing receptor blockade because they compete with agonists for receptor binding.

25) The amount of drug required to cause an effect is referred to as:
A) maximal efficacy
B) dose-effect relationship
C) relative potency
D) adverse effect
Answer: C
Explanation: C) The amount of drug required to cause an effect is referred to as relative potency. Note that potency is rarely important overall. A drug with a higher potency requires smaller doses to produce the same effect as a drug with lower potency. The largest effect that a drug can produce is also known as its maximal efficacy, but its potency does not indicate anything about its maximal efficacy.

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