Pharmacology

Test Bank

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Lecture 9

Q1 : True statement concerning competitive inhibition:

a. With competitive inhibition , the dose-effects curve the shifted to the right .
b. Competitive in addition is based on reversible drug/antagonist binding at receptor sites
c. With competitive inhibition , maximal drug effect cannot be obtained , even at high agonist concentration
d. All the above .

ANSWER : A

Q2: Drug effect are thought to be proportional to the number of occupied receptors :

a. TRUE
b. FALSE

ANSWER : A

Q3: Concerning competitive antagonism , which of the following sentence is correct ?

a. Competitive antagonism is produced by antagonists that have the ability to active Receptors
b. With competitive antagonism, maximal drug effect cannot be obtained , even at high Agonist concentration
c. Competitive antagonism is based on reversible drug/antagonist binding at receptor sites
d. With competitive antagonism , the dose-effect curve is shifted to the right.
e. All of the above

ANSWER: D

Q4: Patient was poisoned with a drug that antagonize receptor A irreversibly, which Of the following Is an appropriate pharmacological intervention?

a. To give drug that increase the metabolism of drug A
b. To give receptor A non-competitive antagonist
c. To give receptor A non-competitive agonist
d. To give another drug that is an agonist to a different receptor such receptor has The same physiological function as receptor
e. To give another drug that is an agonist to a different receptor such receptor has Opposite physiological function to receptor A

ANSWER : D

Q5: Concerning drug receptor interaction , the constant KD refers to :

a. Maximal physiological effect
b. Maximal binding
c. Drug concentration that results in half maximal physiological response
d. The drug concentration required to occupy 50% of receptors
e. All of the above

ANSWER : D

STUDY QUESTIONS (LIPPINCOTT, 6TH EDITION)

2.1 Isoproterenol produces maximal contraction of cardiac muscle in a manner similar to epinephrine. Which of the following best describes isoproterenol?

A. Full agonist.
B. Partial agonist.
C. Competitive antagonist.
D. Irreversible antagonist.
E. Inverse agonist.

Correct answer = A. A full agonist has an E_{max} similar to the endogenous ligand. A partial agonist would only produce a partial effect. An antagonist would block the effects of an endogenous agonist. An inverse agonist would reverse the constitutive activity of receptors and exert the opposite pharmacological effect.

2.2 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 a 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.

Correct answer = B. Without information about the maximal effect of these drugs, no conclusions can be made about efficacy or intrinsic activity. E is false because the maximal response obtained is often more important than the amount of drug needed to achieve it.

2.3 If 10 mg of morphine produces a greater analgesic response than can be 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 a competitive antagonist.
E. Morphine is a better drug to take for pain relief than is ibuprofen.

Correct answer = E. Based on the information presented here, since morphine is more efficacious than is ibuprofen, it is going to provide more pain relief. As long as the situation warrants the necessity of such efficacious pain relief and without any information about differences in side effects caused by the two drugs, morphine is the better choice. Choice C would only be true if both drugs bound to the same receptor population, and that is not the case. The other choices are incorrect statements.

2.4 In the presence of naloxone, a higher concentration of morphine is required to elicit full pain relief. Naloxone by itself has no effect. Which of the following is correct regarding these medications?

A. Naloxone is a competitive antagonist.
B. Morphine is a full agonist, and naloxone is a partial agonist.
C. Morphine is less efficacious than is naloxone.
D. Morphine is less potent than is naloxone.
E. Naloxone is a noncompetitive antagonist.

Correct answer = A. Since naloxone has no effect by itself, B and C are incorrect. Since it decreases the effect of an agonist but this inhibition can be overcome by giving a higher dose of morphine, naloxone must be a competitive antagonist. No information is given about potency of either drug.

2.5 In the presence of pentazocine, a higher concentration of morphine is required to elicit full pain relief. Pentazocine by itself has a smaller analgesic effect than does morphine, even at the highest dose. Which of the following is correct regarding these medications?

A. Pentazocine is a competitive antagonist.
B. Morphine is a full agonist, and pentazocine is a partial agonist.
C. Morphine is less efficacious than is pentazocine.
D. Morphine is less potent than is pentazocine.
E. Pentazocine is a noncompetitive antagonist.

Correct answer = B. Pentazocine has a lower E_{max} value than does morphine but still has some efficacy. Thus, pentazocine is a partial agonist. Even though pentazocine blocks some of the actions of morphine, since it has some efficacy, it cannot be an antagonist. No information is given about the potency of either drug.

2.6 In the presence of picrotoxin, diazepam is less efficacious at causing sedation, regardless of the dose. Picrotoxin by itself has no sedative effect even at the highest dose. Which of the following is correct?

A. Picrotoxin is a competitive antagonist.
B. Diazepam is a full agonist, and picrotoxin is a partial agonist.
C. Diazepam is less efficacious than is picrotoxin.
D. Diazepam is less potent than is picrotoxin.
E. Picrotoxin is a noncompetitive antagonist.

Correct answer = E. Picrotoxin has no efficacy alone, so B and C are false. Since it decreases the maximal effect of diazepam, it is a noncompetitive antagonist. No information is given about potency of either drug.

2.7 Which of the following statements most accurately describes a system having spare receptors?

A. The number of spare receptors determines the maximum effect.
B. Spare receptors are sequestered in the cytosol.
C. A single drug–receptor interaction results in many cellular response elements being activated.
D. Spare receptors are active even in the absence of an agonist.
E. Agonist affinity for spare receptors is less than their affinity for "non-spare" receptors.

Correct answer = C. One explanation for the existence of spare receptors is that any one agonist–receptor binding event can lead to the activation of many more cellular response elements. Thus, only a small fraction of the total receptors need to be bound to elicit a maximum cellular response. The other choices do not accurately describe spare receptor systems.

2.8 Which of the following would up-regulate postsynaptic β_1 adrenergic receptors?

A. Daily use of amphetamine that causes norepinephrine to be released.
B. A disease that causes an increase in the activity of norepinephrine neurons.
C. Daily use of isoproterenol, a β_1 receptor agonist.
D. Daily use of formoterol, a β_2 receptor agonist.
E. Daily use of propranolol, a β_1 receptor antagonist.

Correct answer = E. Up-regulation of receptors occurs when receptor activation is lower than normal, such as when the receptor is continuously exposed to an antagonist for that receptor. Down-regulation of receptor number occurs when receptor activation is greater than normal because of continuous exposure to an agonist.

اللهمَّ انصر الإسلام والمسلمين في فلسطين وأعزَّهم،
اللهم اجعل النصر قريبًا واجعل الفرجَ يأتيهم.
