Enzymology

Questions Bank

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Q1: The affinity of enzyme for substance, when the enzyme has km= 0.8m will be __ than affinity of an enzyme for its substance when the enzyme has km of 0.4m?

a) Double
b) Equal
c) Half
d) Quarter
e) 4 times greater

Answer: Half

Q2: When the rate of enzymatic reaction is controlled by amount of enzyme present, which of the following factors control enzyme level?

Answer : Rate of transcription and protein synthesis

Q3: which of the following is true of enzyme that are regulated by allosteric regulation?

a) They usually have allosteric site
b) The allosteric modulators are usually the substrate of the enzyme
c) They are usually multimeric enzyme
d) Allosteric inhibitors are structure analogue of the substrate.
e) we can apply "*Michaelis–Menten equation*" on it effectively.

Answer: they are usually multimeric enzyme

Q4: the term that describes a theoretical value achieved when all enzyme substrate binding sites occupied by the substrate is ?

a) Km
b) V_{max}
c) K_1
d) K_2
e) V_i

Answer: V_{max}

Q5: If absolute concentration of enzyme is unknown, which of the following values can’t be determined experimentally?

a) v_i and v-max
b) v_i
c) v-max
d) v-max and km
e) Km

Answer: v-max and km

Q6: An allosteric activator that affect km but not v-max does so by ?

a) Allosteric enzyme conformation to demote substrate binding
b) Increase Km thus increase affinity
c) Allosteric enzyme conformation to promote substrate binding
d) Increase Km thus decrease affinity
e) Decrease Km thus decrease affinity

Answer: allosteric enzyme conformation to promote substrate binding

Q7: Which type of regulation occurs in the slowest time frame ?

a) Covalent modulation
b) Feedback regulation
c) Proteolytic cleavage of proenzymes
d) Compartmentation
e) new synthesis of enzyme through gene induction

Answer: new synthesis of enzyme through gene induction

Q8: selective qualities of enzyme are recognized as it’s?

a) specificity
b) High turnover number
c) Thermolabile
d) Site specific.
e) Highly efficient

Answer: specificity

Q9: which of the following statement isn’t correct about enzyme?

a) enzymes are named for the substrate and the reaction catalyzed
b) enzymes are named foe the product formed
c) common name for a hydrolase is derived from the substrate.
d) historical names has no direct relationship to substrate or reaction type
e) Ligases catalyze a reaction in which a C-C, C-S, C-O, or C-N bond is made or broken

Answer: enzymes are named foe the product formed

Q10: pepsin, an enzyme found in the stomach acts best at pH of about 2 , but it’s not active at pH of 7 , why ?

Answer: the optimal ph helps to maintain the enzymes tertiary structure

Q11: which of the following statement concerning enzyme active site is incorrect?

a) Takes the form of a cleft or pocket
b) Should be complementary to the binding site of the substrate
c) Should contain highly reactive groups
d) takes up a relatively small part of the total volume of an enzyme
e) consecutive correct responses

Answer: consecutive correct responses

Q12: Which of the following amino acids participate the most in the active?

a) Tyrosine
b) Threonine
c) Serine
d) Hydroxyproline
e) Valine

Answer: Serine

Q13: If an enzyme is inhibited by a competitive inhibitor which of the following is considered to be effected the least

a) Affinity
b) K1
c) K-1
d) K2
e) K-2

Answer: K-2

Q14:If an enzyme, which is found in an environment with competitive inhibitors and substrates, is working at its maximum speed what would happen if we increase the concentration of substrate? (all other factors are constant)

a) Both the affinity to the substrate and speed of the reaction are decreased
b) The rate of the reaction stay the same but the affinity to the substrate is decreased
c) Both the affinity to the substrate and the rate of the reaction stay the same
d) The affinity to the substrate is increased and the affinity to the inhibitor is decreased
e) The affinity to the substrate is increased, the affinity to the inhibitor is decreased and the speed of the reaction is the same

Answer: Both the affinity to the substrate and the rate of the reaction stay the same

Q15: Non-competitive inhibitors decrease the rate of the reaction by

a) Decreasing the affinity
b) Increasing the affinity
c) Change the shape of the active site
d) Covalently bind to the active site of the enzyme
e) Loosely bind the active site of the enzyme

Answer: Change the shape of the active site

Q16: An enzyme is inhibited by non-competitive inhibitor which of the following statements is true

a) Increasing substrate concentration will exceed inhibitor and completely overcome this type of inhibition
b) The enzyme is still effective at low concentrations
c) The enzyme is still effective at low concentrations and increasing the concentration won't completely overcome this type of inhibition
d) Covalent interactions between the substrate and the enzyme, thus increasing the substrate concentration won't overcome this type of inhibition
e) The affinity of the enzyme to the substrate decrease as the substrate concentration decrease

Answer: The enzyme is still effective at low concentrations

Q17: If an enzyme was inhibited by an allosteric inhibitor which decrease the enzyme Km which of the following statements are true

a) K2 and K-1 is increased and K1 is decreased
b) K2 and K1 is increased and K-1 is decreased
c) K1 and K-1 is decreased and K2 is increased
d) K2 and K-1 is decreased and K1 is increased
e) K1, K2, and K-1 are increased

Answer: K2 and K-1 is increased and K1 is decreased

Q18: Allosteric inhibitors bind V series enzymes and result in

a) Decreasing the turnover number and the affinity
b) Decreasing the affinity
c) Decreasing the affinity and increasing the turnover number
d) Increasing the affinity and decreasing the turnover number
e) Decreasing the turnover number

Answer: Decreasing the turnover number

Q19: Regarding uncompetitive inhibitor which of the following sentences are true

a) Increase the amount of ES and decrease the rate of the reaction
b) Decrease the amount of ES and decrease the rate of the reaction
c) Increase the amount of ES and increase the rate of the reaction
d) Decrease the amount of ES and increase the rate of the reaction
e) Doesn’t change the amount of ES and decrease the rate of the reaction

Answer: Increase the amount of ES and decrease the rate of the reaction

Q20: Regarding uncompetitive inhibitor which of the following sentences are true

a) Increase affinity and Vmax, decrease Km
b) Increase affinity, Km and Vmax
c) increase Km and Vmax, decrease affinity
d) decrease affinity and Vmax, increase Km
e) decrease Km and Vmax, increase affinity

Answer: decrease Km and Vmax, increase affinity

Q21: In test tube we put enzyme, substrates, and an unknown inhibitor and after we mix them together no products has formed. What type of inhibitor have we add to the mixture?

a) Competitive inhibitor
b) Non-competitive inhibitor
c) Uncompetitive inhibitor
d) Suicidal inhibitor
e) Allosteric inhibitor

Answer: Suicidal inhibitor

Q22: An enzyme has been modified covalently and turn from the active form to nonfunctional form irreversible. What type of modification was done on the enzyme

a) Suicidal inhibition
b) Phosphorylation
c) Dephosphorylation
d) Allosteric inhibitor addition
e) Allosteric activator addition

Answer: Suicidal inhibition