

ENZYMES

Unit 1

Enzymes- Definition, nomenclature and classification of enzymes, properties. Structure and functions of coenzymes. Metallo enzymes and metal enzymes. Units of enzyme activity, turn over number. Non protein enzymes- ribozymes and abzymes.

Unit 2

Isolation and purification of enzymes: Methods of purification. Separation procedures based on molecular size, solubility difference and electric charge and selection adsorption. Criteria of purity of enzymes.

Unit 3

Enzyme kinetics: Factors influencing enzyme activity, Derivation of Michalis-Menton equation, Lineweaver-Burk plot, activators, Inhibitors kinetics - Types of inhibition-Competitive, noncompetitive, uncompetitive, feed back inhibition and allosteric inhibition.

Unit 4

Mechanism of enzyme action- active site, Lock and Key model, induced fit hypothesis. Mechanism of enzyme catalysis, enzyme-substrate complex formation, mechanism of bisubstrate reactions. Allosteric enzymes.

Unit 5

Multienzyme complex- pyruvate dehydrogenase, Isoenzymes of lactate dehydrogenase. Immobilized enzymes- principles and applications: Enzymes as a marker in clinical diagnosis. Industrial applications of enzymes.

References

1. Diagnostic Enzymology – Hawcroft, John Wiley.
2. The nature of enzymology – Foster.
3. Fundamentals of enzymes – Price.
4. Enzymes-Dixon & Webb.
5. Biochemistry – Stryer.
6. Understanding enzymes – T. Palmer, Prentice Hall.