

V -SEMESTER
ENZYMOLOGY- (Course No-6)
Credits -3

COURSE OBJECTIVES

1. To enlighten the students about enzyme kinetics.
2. To help the students to understand the mechanism of action of enzymes.
3. To help the students to learn the applications of enzymes.

UNIT-I

Introduction to enzymes: Holoenzyme, apoenzyme, prosthetic group. Interaction between enzyme and substrate- lock and key model, induced fit model., enzyme specificity and types. IUB system of classification and nomenclature of enzymes (Class and subclass with one example) Ribozymes, Abzymes.

UNIT-II

Enzyme kinetics: Importance, order of reaction, study of the factors affecting the velocity of enzyme catalyzed reaction- enzyme concentration, temperature, pH, substrate concentration, inhibitors and Derivation of Michaelis -Menten equation and Km value determination and its significance. Definition of Vmax value of enzyme and its significance. Lineweaver- Burk plot (Only for single substrate enzyme catalyzed reaction).

UNIT-III

Methods of measurements and expression of enzyme activity. Unit of enzyme activity - definition and importance. Enzyme inhibition: Reversible and irreversible – examples. Reversible- competitive, noncompetitive and uncompetitive inhibition- explanation of double reciprocal plot with examples.

UNIT-IV

Enzyme regulation – covalently modulated enzymes with examples of adenylation and phosphorylation and allosteric regulation- example Aspartate trans carbamoylase. Isoenzymes- Lactate dehydrogenase and creatine phosphokinase. Zymogens

UNIT-V

Immobilization of enzymes, methods of immobilization. Industrial uses of enzymes: Detergent enzymes, thermo stable alpha amylase, papain, chymotrypsin

V - SEMESTER
ENZYMOLOGY- (Course No-6)
Credits -1

PRACTICAL SYLLABUS

1. Assay of α - amylase activity in saliva
2. Determination of optimum pH of a plant/animal or microbial enzyme.
3. Studying the effect of different temperatures during enzyme activity measurements.
4. Studying the effect of different pH during enzyme activity measurements.
5. Substrate saturation and determination of Km value from Michaelis Menten curve.

COURSE OUTCOMES

After completing this course, the student will:

1. Acquire the knowledge of structure and organization of protein
2. Identify the different classes of enzymes, the methods used for purification of enzymes and describe enzyme kinetics for bisubstrate and multisubstrate reactions.
3. Do research in a contemporary action of enzyme and enzyme inhibition.
4. Explain the enzyme regulation and multienzyme complex.
5. Explore the applications of enzymes in clinical and various industrial sectors.

REFERENCE BOOKS

1. Enzymes: M. Dixon and E. C. Webb. Longman Publication.
2. Enzymology: Nicholas and Price
3. Biochemistry: D.Voet and J. G. Voet, John Wiley & sons Inc. New York ChischesterBrisbane,Toronto, singapore ISBN 0-471-58651-X
4. Biochemistry: L. Stryer. and Hall, J.E., Library of congress cataloguing-in publication Data, Bery, Jeremy mark ISBN -0-7167-4684-0.
5. Enzymes: Trevor Palmer Affiliated East- West Press Pvt. Ltd, New Delhi ISBN 81-7671-04