

Tikrit University

College of Nursing

Basic Nursing Sciences



1st stage - 2023-2024

Biochemistry

(Lecture (8) Enzymes)

by:

MSc. Reemy Marwan Mohammed saleh

Enzymes

enzymes are biological catalysts which bring about chemical reaction in the living cell:

Definition

- . produced by the living organism in small amounts.
- . Functions: digestion, breathing, synthesis and break down of CHOS, proteins, fats
- . enzymes acts upon substance called substrate.
- . enzymes convert substrate into product. Ex: lactose lactase galactose + glucose
- . 16% of weight is nitrogen.

physical properties: 1-Heat labile 2-Soluble in water

3. Precipitate by precipitating agent (ammonium sulphate or trichloroacetic acid).

General properties of enzymes :

1. all enzymes are proteins.
2. enzymes accelerate the reaction but:
 - a. do not alter the reaction equilibrium
 - b. not consumed in overall reaction
 - c. required in very small quantities.
3. enzymes are highly specific for their substrate.
4. enzymes possess active site, at which interaction with substrate take place.

Sources of enzymes:

enzymes that function within the cells, most of enzymes are these types

Endoenzymes

Ex: metabolic oxidase.

enzymes that are liberated by cells and catalyze reactions outside the cell

Exoenzymes

Ex: digestive enzymes (amylase, lipase, protease).

Chemical composition of enzymes :

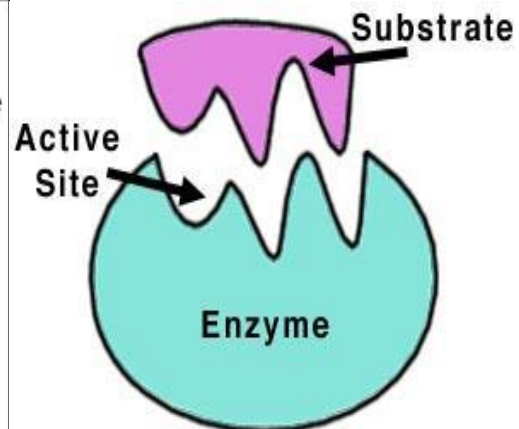
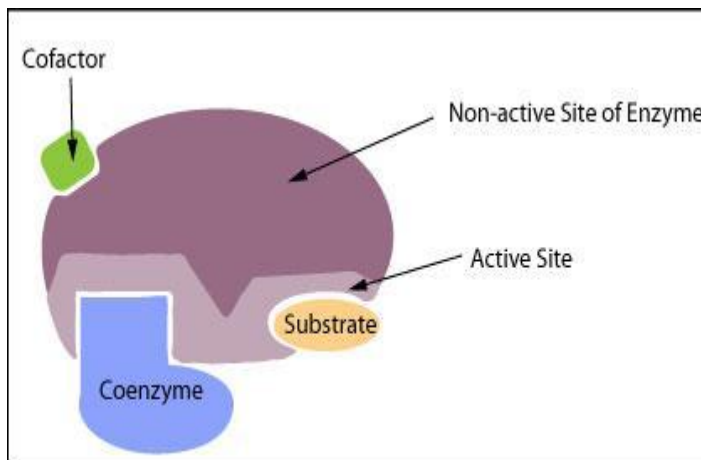
Enzymes classified according to their chemical composition into.

1. Enzyme consist of only protein.

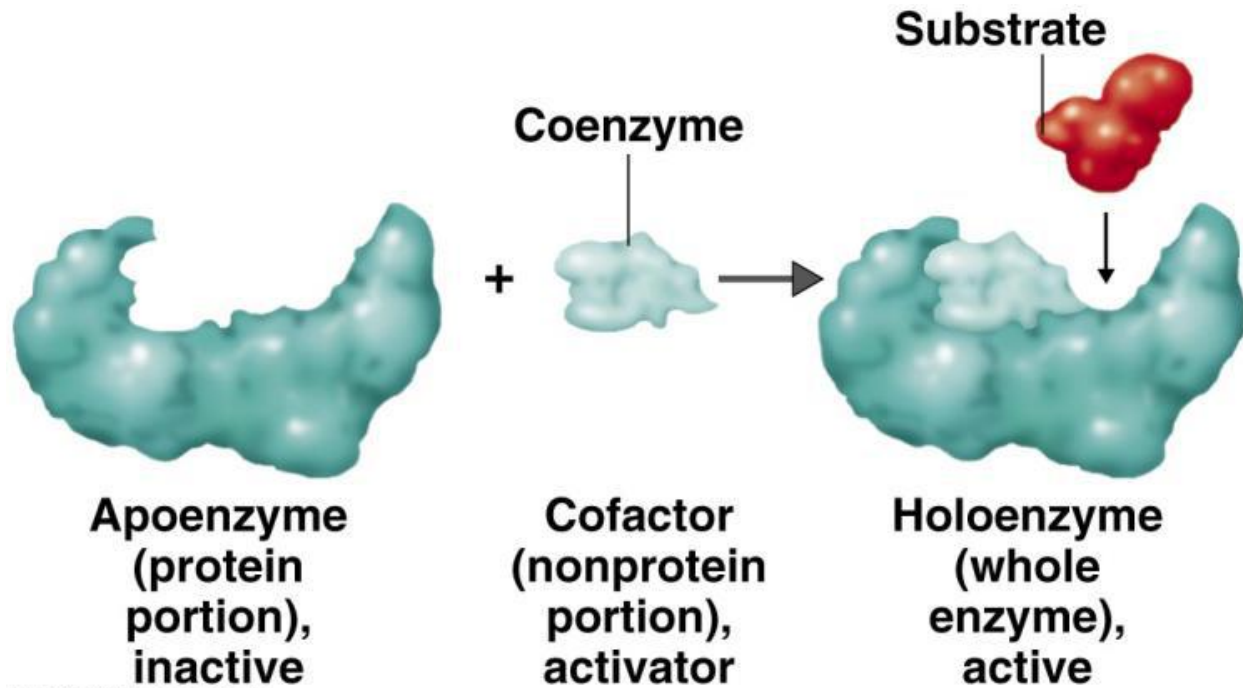
Ex: pepsin, trypsin (amino acids binding peptide bonds).

2. Enzyme consist of : protein (enzyme) + Co - Enzyme = Holoenzyme

(apoenzyme)



3-Protein (enzyme) + prosthetic group (Co – factor) = Holoenzyme



Copyright © 2010 Pearson Education, Inc.

Coenzymes: are typically organic molecules, used by enzymes to help catalyze reactions, contain functionalities not found in proteins

catalytically essential molecules or ions that are covalently bound to the enzyme are cofactors

enzyme consist of Apoenzyme + prosthetic group :Holoenzyme

.term refers to the protein part of enzyme : Apoenzyme

enzyme, inhibitor -ction with substrate, cothe point in the enzyme which intera

Active site of enzymetake place.

.the active form of enzyme :Zymogen

Ex: pepsinogen Hcl pepsin (active)

Ex: trypsinogen enterokinase trypsin (active)