

B.Sc-I (Zool Honrs)

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Date 29/01/2022

(TST PDF)

ENZYMES

Enzymes is a type of biocatalyst which is formed inside the living cell of organisms. it increases the rate of reactions of living body but can not take part in reactions i.e it comes out in unchanged form at the end of reaction. The first enzymes for fermentation was first time extracted from yeast cells by Dr. Buchner in 1897 in the form of enzyme. Later other enzyme was isolated by Dr. Sumner in the form of urease. Enzyme can act both outside the cell at its formation. If enzymes can act outside the cell then called exoenzyme and if acts inside the cell then called endoenzyme.

On the basis of chemical composition enzymes are of two types: —

- (1) APOENZYME (2) HOLOENZYME.

1. APoenZYME OR SIMPLE ENZYME:— Such type of enzymes are purely made by proteins.

2. HOLOENZYME OR CONJUGATED ENZYMES:— Such type of enzymes are made by proteins as well as some non proteinous groups. These non proteinous groups are called prosthetic groups i.e. Apoenzyme + Prosthetic group = Holoenzyme

The prosthetic groups are of two types:— (i) COENZYMES:— These prosthetic groups are take part in group transfer reaction. Some examples are NAD (Nicotinamide adenine dinucleotide) and FAD (Flavin adenine dinucleotide) which react with H_2 and convert into $NADH_2$ and $FADH_2$ respectively. After hand over its H_2 to any substrate it again converts into NAD and FAD respectively.

(ii) ACTIVATOR:— These prosthetic groups are found in the form of metal or non metal ions like Mg^{++} , Mn^{++} , Ca^{++} , Fe^{++} etc. These activator take part in oxidation and reduction by exchange of electrons.

PROPERTIES OF ENZYMES:—

(A) PHYSICAL PROPERTIES:—

(i) Enzymes are either completely or partially made by proteins hence it shows proteinous properties.

(ii) Enzymes are colloidal in nature hence it provides large surface area for reactions.

(B) CHEMICAL PROPERTIES (CATALYTIC PROPERTIES):

The properties of enzymes similar to inorganic catalysts are as follows:—

- (i) Enzymes are required in very minute quantity.
- (ii) Enzymes neither start the reaction nor stop it.
- (iii) Enzymes can not take part in reaction but increases the rate of reaction.
- (iv) Enzymes are specific in action i.e. it can act with particular substrate.
- (v) Maximum enzymes can show the reversible reactions.

(C) NON CATALYTIC PROPERTIES:—

The properties of enzymes dissimilar from catalyst are as follows:—

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Briefly describe the character sketch of the author (known in the book as)

- (i) Enzymes are more sensitive ~~even~~ even in small change of temperature, pressure and pH value.
- (ii) Enzymes are much efficient than inorganic catalyst.