

CLASSIFICATION, PROPERTIES AND MECHANISM OF ACTION OF ENZYMES

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Annotation: Any living organism consists of a large number of different atoms and molecules. They interact during reactions and form the material basis of all life processes. These reactions occur in the body at high speed at body temperature and normal atmospheric pressure. This is achieved in the body due to specific catalysts - enzymes, which have a protein nature.

Keywords: enzyme, pF, coenzyme, oxidoreductase, transferase, linase,

Annotatsiya: Har qanday tirik organizm ko'p miqdordagi har xil atom va molekulalardan tashkil topadi. Ular reaksiya davomida o'zaro ta'sir etib, barcha hayotiy jarayonlarning moddiy asosini tashkil qiladi. Bu reaksiyalar organizmda tana haroratida va me'yordagi atmosfera bosimida yuqori tezlik bilan o'tadi. Bu organizmda oqsil tabiatiga ega bo'lgan spetsifik katalizatorlar — fermentlar hisobiga erishiladi.

Kalit so'zlar: ferment, pF, koferment, oksidoreduktaza, transferaza, linaza,

Аннотация: Любой живой организм состоит из большого количества различных атомов и молекул. Они взаимодействуют в ходе реакции и составляют материальную основу всех процессов жизнедеятельности. Эти реакции протекают в организме с большой скоростью при температуре тела и нормальном атмосферном давлении. Это достигается за счет специфических катализаторов – ферментов, имеющих в организме белковую природу.

Ключевые слова: фермент, пФ, кофермент, оксидоредуктаза, трансфераза, линаза.

Enzymes are proteins by their nature, they have all the properties of proteins. They are high-molecular polymers, soluble in water, form colloidal compounds, they are amphoteric electrolytes. However, they have some properties characteristic only of enzymes. The basis for determining the activity of enzymes is the study of the rate of the reaction catalyzed by this enzyme. This rate depends on a number of factors, including the concentration of the enzyme, substrate and coenzymes, temperature, the effect of the pF of the coenzymes, etc.

The rate of enzymatic reactions increases with increasing temperature, but up to a certain point, it is called the optimal temperature (35-45° C for the enzymes of the organism). The rate of the reaction increases by a factor of 2 for every 10° C until this point.

A further increase in temperature leads to a change in the structure of the activated center of the enzyme. This disrupts its ability to bind to the substrate, the enzyme is activated at 70-80° C. When the temperature drops, the activity of enzymes slows down, but does not stop completely.

Most enzymes are proteins, but some are ribonucleic acid (RNA) molecules. RNA molecules translate information from DNA and make proteins. Each cell contains thousands of enzymes that provide specialized help throughout the body. Enzymes help with the chemical reactions that keep people alive and healthy. For example, they perform essential functions in metabolism, the process of converting food and drink into energy. Enzymes speed up (catalyze) chemical reactions in cells. More specifically, they lower the threshold needed to start the intended reaction. They do this by binding to another substance called a substrate.

Classification of enzymes

In 1961, the 5th International Congress of Biochemists in Moscow adopted a new classification of enzymes. The basis of its designation was the type of reaction catalyzed by this enzyme. All enzymes are divided into six classes according to this principle.

Class I - oxidoreductases. This class includes all enzymes that catalyze oxidation-reduction reactions (lactate dehydrogenase, which provides the oxidation and synthesis of lactic acid, xanthine oxidase, which catalyzes the reaction of uric acid formation, etc.).

Class II - transferases. Enzymes of this class carry out the transfer of various functional groups between molecules. (Methyltransferases transfer methyl groups; aminotransferases transfer the amine group).

Class IV - linases. When dividing the classes of enzymes, their hydrolytic cleavage of double bonds is used. Class III - hydrolases. This includes enzymes that provide hydrolysis processes of various compounds by breaking bonds within molecules in the presence of water (all enzymes of the gastrointestinal tract; pepsin, lipase, amylase, sucrose, trypsin, etc.).

The property is taken as a basis.

Class V - isomerases. These enzymes catalyze the interconversion (transition) of substrates.

Class I - ligases. Enzymes of this class participate in all synthesis reactions. They catalyze the addition of activated amino acids to RNA, the formation of peptides.

References:

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