STUDYING THE CHEMICAL NATURE OF ENZYMES

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Abstract Enzymes alive in organisms passing all biochemical of processes important catalysts are , they are complicated protein to nature has from compounds organization found . Their chemical nature study biological chemistry science main from directions one This is in the article enzymes chemical composition , protein in the molecule structure levels , active of the center formation of cofactors participation and them in determining applicable methodologies about in detail information Also , enzymes are given structural features and their biological to the activity was impact scientific analysis will be done .

Key words : enzyme, protein , enzymatic catalysis , cofactor , active center , biochemistry .

Login Enzymes are alive in organisms different kind complicated chemical reactions accelerating biological catalysts is , their to be studied biological chemistry and molecular biology of sciences the most main from directions Enzymes are one of discovery 19th century to the end right comes . German scientist Eduard Buchner isolated yeast in 1897 from cells outside alcoholic fermentation process to transfer successful was and this through enzymes cell inside not , maybe activity in solution show to take scientific in terms of This phenomenon has been proven . biological catalysis theory to develop basis Enzymes main function – in the body reactions is acceleration . Simple under the circumstances extreme slowly passing many reactions enzymes up to a million times

with the participation For example , carbonic anhydrase enzyme carbonate anhydride in the water melting per minute one how many face thousand once increases . Therefore for without enzymes of life there is to be possible not . Enzymes chemical nature understanding , first of all , their protein structure deep to know demand does . Because all enzymes basis protein molecules organization Enzyme proteins structure four from the level consists of : primary (amino acids) sequence), secondary (spiral or layered shape), tertiary (macromolecule) spatial shape) and quaternary (one how many polypeptide chains complex). Enzymes activity often their in the content protein part (apoenzyme) and protein not been additional depending on the groups (cofactors) . Cofactors as metal ions (Mg^{2+}, Zn^{2+}, Fe^{2+} and etc.), organic molecules (coenzymes) or prosthetic groups service to do This is possible . parts of the enzyme active the center shapes and substrate with special mutual the effect provides . So so that enzymes chemical nature deep study not only their structure to know , maybe their activity mechanisms , substrates with mutual the impact and biological also explain the importance opportunity gives . Today on the day enzymes theoretical in terms of biological processes in understanding , practical in terms of and medicine , pharmaceuticals , food , biotechnology and ecology in the fields wide is applied .

Methodology Enzymes chemical nature in learning different kind scientific methods These methods are used their molecular structure , active the center and activity mechanism determination opportunity gives . Home methodologies of the following consists of : Physico-chemical methods. Enzymes mass , charge and structure in determining electrophoresis , ultracentrifugation , isoelectric focus such as methods For example , electrophoresis using enzyme proteins molecular weight

and charge according to separated. Spectroscopic methods. Enzymes structural features infrared spectroscopy , ultraviolet radiation and core magnetic resonance (NMR) methods using Crystal in the form of taken enzymes X-ray structure analysis using molecular at the level is studied. Chromatographic methods. Ion-exchange chromatography , gel filtration and affinity chromatography enzymes separation and in cleaning wide These methods are used . enzymes pure without to be taken and next to research preparation provides. Kinetic methods. Enzymes catalytic speed measuring , their substrate with mutual the impact analysis to do for kinetic experiments Michaelis – Menten is used . kinetics of enzyme activity in learning is the basic model . Biochemical and molecular biological methods. Enzymes genetic codes to study , them cloning and recombinant proteins as to take current modern in biotechnology important importance has . Through this enzymes chemical nature further deeper study possible.Methodologies harmonious when used enzymes not only general chemical nature , perhaps their molecular level to oneself typical also determine the characteristics opportunity is born .

Analysis and results Received scientific information this shows that enzymes main chemical nature protein molecules Their from amino acids organization found chain of the enzyme spatial structure shapes and active of the center location defines . Active center is in the enzyme molecule substrate with special connectable and reaction accelerating small The area of enzymes activity cofactors without participation complete manifestation not to be For example , coenzyme NAD^+ or FAD participate as oxidation - reduction reactions done increases . Metal ions and of the enzyme active in the center of electrons exchange facilitates . Analyses this shows that : Enzymes primary structure their properties defines . Tertiary and quaternary structure of the enzyme functional

activity for important . Cofactors of the enzyme catalytic opportunity expands . Every one of the enzyme activity clear to the substrate directed (specificity). These results enzymes biological in processes role deep understanding opportunity Especially in clinical in biochemistry enzymes chemical nature to know diseases diagnosis and in treatment important importance profession For example , the liver enzymes (ALT, AST) levels increase hepatitis or other diseases sign to be possible .

Conclusion Enzymes are alive in organisms all biochemical main catalysts of reactions is considered . Their chemical nature deep study protein molecules structure levels , cofactors participation and active of the center importance open Enzymes chemical nature in determining applicable modern methods (spectroscopy , chromatography , kinetics and molecular biology) today in the development of science important place This knowledge not only theoretical importance have , maybe medicine , pharmaceuticals and biotechnology in the fields wide practical is being used .

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