Enzyme Role on Biomedical Reaction

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Background: The use of enzymes in the diagnosis of disease is one of the important benefits derived from the intensive research in biochemistry since the 1940's. Enzymes have provided the basis for the field of clinical chemistry. It is, however, only within the recent past few decades that interest in diagnostic enzymology has multiplied. Many methods currently on record in the literature are not in wide use, and there are still large areas of medical research in which the diagnostic potential of enzyme reactions has not been explored at all. This section has been prepared by Worthington Biochemical Corporation as a practical introduction to enzymology. Because of its close involvement over the years in the theoretical as well as the practical aspects of enzymology, Worthington's knowledge covers a broad spectrum of the subject. Some of this information has been assembled here for the benefit of laboratory personnel. This section summarizes in simple terms the basic theories of enzymology. Overview Enzymes, in general, provide speed, specificity, and regulatory control to reactions in the body. Enzymes are usually proteins that act as catalysts, compounds that increase the rate of chemical reactions. The study of the evolution of proteins has been traditionally undertaken from a sequence and structural point of view. However any attempt to understand how protein function changes during evolution benefits from consistent definitions of function and robust approaches to quantitatively compare them. Microbes utilize enzymes to perform a variety of functions. Enzymes are biocatalysts working as highly efficient machines at the molecular level. In the past, enzymes have been viewed as static entities and their function has been explained on the basis of direct structural interactions between the enzyme and the substrate. A variety of experimental and computational techniques, however, continue to reveal that proteins are dynamically active machines, with various parts exhibiting internal motions at a wide range of time-scales. Increasing evidence also indicates that these internal protein motions play a role in promoting protein function such as enzyme catalysis. Moreover, the thermo dynamical fluctuations of the solvent, surrounding the protein, have an impact on internal protein motions and, therefore, on enzyme function. The function of enzymes is described as their ability to catalyze biochemical reactions according to the Enzyme Commission (EC). This dissertation explores aspects of the chemistry and evolution of a small class of enzymes catalyzing geometrical and structural rearrangements between isomers, the isomerizes. Method: Articles and thesis from the internet was used, biochemistry textbooks by different authors with different opinion on the topic was specially analyzed in these work.
Conclusion: Since the pace of biochemical reactions is not so quick in absence of enzymes, thus, the enzymes can be considered as catalysts that speed up the reactions such that the time can be shortened from years to seconds. Next to catalytic properties, enzymes have also the property to increase the pace of reaction without influencing the chemical equilibrium; hence, the final energy of products is not changed, though the activation energy is reduced for the purpose of increase the rate of reaction. Hence, the enzymes are catalysts that speed up the rate of reaction by mean of reduction of activation energy and preservation of chemical equilibrium of reactants and products. The scope of this dissertation was to understand more about it chemistry .They also serve in various applications for biotechnology and chemical synthesis However, the study of the evolution of enzyme function needs also to be informed by mechanistic data (Furnham et al., 2012a; Nath et al., 2014).

Key words: *Enzymes, Catalysis, substrates.*