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Perspective

The function of enzymes in microbiology

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DESCRIPTION

In living organisms, an enzyme acts as a catalyst, influencing the rate at which chemical reactions occur while remaining unaffected.

Enzymes reduce the activation energies of chemical reactions and encourage the reactions that are particular to the cell's function in cells. Enzymes are crucial to cell activity because they ultimately control which chemical reactions a cell can perform and at what rate.

Enzymes are proteins that are recognised as biological catalysts because of their capacity to speed up and improve the efficiency of reactions. They bind to a substrate in a very specific way because they have a region called an active site where the enzyme's molecules have a high degree of specificity with the substrate's molecules. This is how the enzyme-substrate complex is formed, and the enzyme then hydrolyzes the substrate, resulting in the release of the product. The enzyme returns to its original condition after the reaction.

In the human body, enzymes help to speed up chemical reactions. They cling to molecules and manipulate them in precise ways. Breathing, digestion, muscle and nerve function, and a number of other functions rely on them.

Bacteria eat garbage and turn it into harmless byproducts like carbon dioxide and water. When waste materials are exceedingly complex (like pond sludge), bacteria produce enzymes to break them down into simpler molecules that bacteria can absorb.

As a result, enzymes can be found in plants, animals, and microbes, among other places. Plant-based enzymes including papain, bromelain (bromelin) ficin, and malt diastase

are commercially available. The glands have the largest concentration of enzymes in the animal body.

They play thousands of roles, including respiration, digestion, muscle and nerve function.

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Enzymes from microorganisms are used in a variety of industries for specific applications: in the textile industry, they can improve fabric quality; in the pulp and paper industry, they are used in biomechanical pulping and bleaching; and in the food industry, they are used in fermentation processes for the production of bread and beverages such as wine and beer, as well as in the extraction of substances such as carotenoids and other antioxidants.

Enzymes are biological substances or biological macromolecules produced by living organisms that act as a catalyst in the production of a certain biochemical reaction. These act as chemical catalysts in chemical reactions, speeding up biological and biochemical reactions both inside and outside the cell.

Since ancient times, naturally occurring enzymes have been used extensively in the production of items such as linen, leather, and indigo. All of these processes rely on either microorganism-produced enzymes or enzymes found in additional preparations like calves' rumen or papaya fruit. The invention of fermentation techniques was specifically directed at the manufacture of enzymes using specially selected strains, allowing for the large-scale production of pure, well-characterized enzymes.

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These important biomolecules are produced in large quantities using a variety of microbes and other model systems. Since then, intensive screening has led to the discovery of

several microbes and their enzymes with unique functions, which are now widely used in a variety of industrial and medicinal domains.