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Biocatalytic Enzymes Have Wide Applications in the Real World

Bingly Fiona[1], Laisa Liane Paineiras-Domingos[1], Caio Maximino[2]

[1]Universidade do Estado do Rio de Janeiro, [2]Universidade Federal do Sul e Sudeste do Pará

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Bingly Fiona

The interpretation of enzymes in the modern industry certainly does not refer to yeast, but to proteins with catalytic functions. As a natural catalyst, enzymes promote various chemical reactions in cells and play a vital role in the existence of living organisms. From the concept of enzymes, to the mature industrial enzyme production, it has probably gone through 130-40 years. The Greek translation of the enzyme is "in yeast", meaning from yeast. In 1897, after the methods of disruption for yeast, the extract obtained had the function of converting glucose into alcohol and carbon dioxide. Since then, people have begun to identify and explore "some biological macromolecules can catalyze chemical reactions."

Compared with traditional chemical catalysis, the characteristics of protein catalysis/enzyme catalysis are high quality and less waste. This is one of the reasons why the enzyme industry has risen in the past 40 years. The development of modern biotechnology is also an important driving force for the enzyme industry to move forward. Contemporary biotechnology, such as sequencing technology, protein engineering (enzyme engineering), fermentation, and bioprocessing, are all contributing to development and production. More complex and efficient enzyme products. It is believed that in the near future, the enzyme industry will only continue to expand and penetrate into more areas where the traditional chemical industry is difficult to expand.

The practical application of enzymes has been very extensive, including technology industry, food manufacturing, animal feed, organic synthesis and other fields.

In the field of application of these enzymes, the most common one should be the detergent manufacturing industry. The application of detergent and enzymes can be traced back to the 1960s. It was found that enzymes can catalyze the degradation of stubborn stains at relatively mild temperatures. Enzymes can also be naturally degraded as proteins without any environmental stress. The enzymes added to the current washing powder mainly include: protease, lipase, amylase, cellulase. Protease accounts for a large proportion. It is worth mentioning that almost all proteases in the detergent industry today are found in Bacillus species.

In addition to washing powder, what is the application of enzymes in the textile industry? The most common should be the enzymatic treatment of wool fabrics. As early as the 1980s, people began to use protease to treat wool fabrics to prevent shrinkage. Traditional wool fabrics require a chlorine-hercosett process to prevent shrinkage, but this method is not environmentally friendly, and later enzyme treatment is much better. In addition to the production of enzymes, the food industry's demand for enzymes is also quite large. For example, in the global enzyme industry sales in 2018, the food industrial enzymes sales reached 1.5 billion US dollars, and in terms of enzyme products, the demand grows fast.

In the food industry, the most common enzyme applications should be amylase and amyloglucosidase hydrolyzed starch. The hydrolyzed starch produces small molecular monosaccharides or polysaccharides that give the food a sweet taste. In addition to this, there is an example in which glucose isomerase is used to catalyze glucose to produce fructose syrup.

Enzymes, in other words, are just proteins. Since there are only a lot of enzymes for industrial use in the future, it is known that the future development and optimization of catalytic proteins is essential. So what is enzymes development and optimization?

If you are an enzyme company owner and want to produce enzymes, you definitely want your enzymes to have low production costs, high product stability, and high enzyme catalyzed efficiency. But most of the enzymes found in nature do not have these characteristics, then you either go to the natural world to find enzymes that are more in line with production requirements, or to modify existing enzymes to meet your expectations. This is called development and optimization.

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