



Industrial microorganisms. Microbiological enzyme systems for industrial processes.

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- Industrial microbiology is the science of the most important microbiological processes and their practical application to obtain valuable products of microorganisms and their biomass as the most important protein product in an industrial way, to obtain individual nutrients (drugs) used in various sectors of the national economy and medicine. The basis of this science is microbiological technology (biotechnology), which is the embodiment of the results of basic research on the physiology, biochemistry and genetics of microorganisms in practice.
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- Industrial (sometimes called technical) microbiology is one of the main sections of modern microbiology.
 - This section of microbiology considers theoretically and solves practically many problems associated with the production of a large number of products resulting from microbiological synthesis. Microorganisms, possessing a wide range of various enzyme systems, are able to form various metabolic products in the process of their vital activity, which are very chain for practical human activity. Microbes are also capable of modifying natural or chemically synthesized compounds into substances necessary for practice.
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- Genetic engineering has made a significant contribution to modern industrial microbiology, which has expanded the arsenal of traditional microbial synthesis substances with completely new products of cloned genes.

 - Conventionally, microbial production can be divided into three types:
 - - based on the use of live or inactivated biomass of microorganisms; this includes the production of baker's, wine and fodder yeast, vaccines, protein-vitamin concentrates (BVK), plant protection products, sourdoughs for the production of fermented milk products and silage feed, soil-fertilizer preparations;

 - - producing microbial biosynthesis products, which include antibiotics, hormones, enzymes, amino acids, vitamins;

 - - production based on the production of products of fermentation, rotting, for example, the utilization of cellulose and various wastes in order to obtain carbohydrates, biogas, bioethanol. This also includes the production of alcohols, organic acids, solvents, as well as biotechnology utilization of non-natural compounds.
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Currently, the development of biotechnology, scientific discoveries in Enzymology made enzyme preparations an indispensable participant in many food technology. The use of enzymes allows you to increase the speed technological processes, significantly increase the yield of finished products, improve its quality, save valuable raw materials and reduce waste.

For obtaining food grade enzyme preparations used organs and tissues of farm animals, cultural plants, special strains of microorganisms (mold fungi, bacteria). Thus, by origin and type of raw materials they can be divided into three groups.

Herbal enzymes are extracted from papaya, fig, pineapple, as well as represented by malt and preparations on malt based.



Enzyme preparations of animal origin are isolated from different parts of the gastrointestinal tract of animals.

Essentially - this is digestive enzymes. They produce rennet, pepsin (chicken, beef, pork), trypsin, chymotrypsin. They are all proteolytic enzymes.

Rennet from the word "rennet" (rennet) - saline and The dried stomach of ruminants has two active ingredients: chymosin and pepsin.



Microbial enzyme preparations are obtained by cultivation of specific microorganisms capable of producing certain enzymes. Currently, most enzymes in industries are produced using bacteria and molds in special apparatus bioreactors (fermenters) in tightly controlled conditions. There are bacterial enzyme preparations obtained by deep cultivation of bacteria, and fungal, obtained by surface cultivation of microscopic fungi.



Enzyme preparations are actively used in obtaining fruit and vegetable juices, soft drinks, production protein hydrolysates, invert syrup, egg powder, chocolate, cocoa, coffee, pectin, seasonings, flavoring products, etc. Important and

The promising area of application of enzyme preparations is catering: the production of ready meals, culinary products, semi-finished products.

