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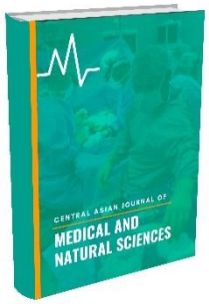

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The Developing New of Biotechnology Fields

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ABSTRACT: *This article deals with the emerging new areas of biotechnology, namely biogeotechnology, bioenergy technology. Modern biotechnology has entered the 21st century with great achievements. To date, modern biotechnological methods using genetically engineered interferons for pharmaceuticals, insulin, somatotropin, hepatitis vaccine, enzymes, diagnostic materials for clinical research (drug testing systems for hepatitis, hepatitis and a number of other infectious diseases, reagents for biochemical tests, flexible biological plastics, antibiotics, and many other biocompatible products).*

KEYWORDS: *biotechnology, biological process, technology, biogeotechnology, bioenergy technology, microorganism, plant, animal cells, enzymes, drugs*

INTRODUCTION

Biotechnology or technology of biological processes means the industrial use of biological agents or their complexes (microorganisms, plant and animal cells, their components) for the production of desired products. Biotechnological processes of production of microorganisms, plant and animal cells, isolated enzymes, cellular organelles, proteins, organic acids, amino acids, alcohols, drugs, enzymes, hormones and other substances in a pure or immobilized state. It is widely used in the production of organic substances (for example, biogas), in the separation of pure metal, in the treatment of wastewater and agricultural or industrial waste.

The purpose of the study. Underground microorganisms are widely used in biogeotechnology - in the extraction of oil and gas, their processing and transformation into other products.

Biogeotechnology also involves the extraction of pure precious metals using the ability of microorganisms belonging to a particular species or category to dissolve metals (smelting metals from ores).

For example, various strains of Thiobacillusferrooxydans are widely used to extract iron, zinc, copper, gold, silver, uranium and other metals from natural ores or their waste. This process is based on the formation of sulfuric acid from the sulfides of substances contained in minerals.

The bacterium Chromobacteriumviolaceum has the ability to dissolve gold, and the process is as follows: Au → Au (CN) 4.

Pseudomonas and the thermophilic bacterium Sulfolobus have been isolated from bacteria that are effective at separating sulfur from coal, which is one of the most important environmental concerns. The environment of the coal-mining areas will be heavily polluted with sulfur.

Citrobactersp., which collects uranium, copper, cobalt and other substances in its biomass when extracting metals from wastewater. and Zoogloea strains are used effectively. Citrobactersp. mutant strains synthesizing the high-level phosphatase enzyme were obtained from the strain. Such efficient producers accumulate 2.5 times more uranium than natural strains.

This process occurs due to the release of inorganic phosphate from phosphorus-containing compounds by the enzyme phosphatase, which leads to the deposition of metal on the cell surface.

Rhodococcus and Nocardiasp. For the sorption and emulsification of petroleum hydrocarbons in an aqueous medium. types of bacteria are used.

They have the properties to separate water and oil from each other, condense oil and purify waste water from oil mixtures. The most valuable cleaning products are halobacteria. Some strains of these bacteria are widely used for cleaning baths from fuel oil.

Along with natural bacteria, genetically engineered bacteria are promising.

Pseudomonassp. The strain's plasmid contains a gene for enzymes that break down substances such as octane, comfort, naphthalene, and xylene. As a result, strains have been created that effectively get rid of crude oil. Such strains are used in biotechnological treatment of contaminated water.

From the examples above, we can see that biotechnological processes are already effectively used to solve environmental problems.

In this regard, it is expected that in the XXI century it will be possible to create an environmentally friendly and more economical production process.

Bioenergy technology. Let's compare the energy reserves created by the process of photosynthesis in plants on Earth with the natural energy reserves. It is well known that the energy produced from hydrocarbons and biogas (methane) is much more efficient than the amount of energy produced by burning dry biomass.

Methane "fermentation" or biometanogenesis is the conversion of biomass into energy. This process was discovered by Volt in 1776, who noticed that the gas coming out of the swamp contains methane. The biogas produced in this process consists of 65% methane, 30% carbon dioxide, 1% hydrogen sulfide, and very small amounts of oxygen, hydrogen, and carbon dioxide (bivalent carbon monoxide).

Thus, methane fermentation was discovered in the late 18th century, and several types of microorganisms (most often Methanobacterium and M. figi) are involved in this complex process. The production of biogas uses a mixture of organic products (straw, poultry and animal waste, algae, cellulose-retaining biomass, etc.) necessary for the association of methane-producing microbes.

Biogas is already widely produced in China, India and the Philippines, France and other countries. Methane is not only needed for energy production. Its production is also closely related to the processing of industrial and agricultural waste and the solution of environmental problems. Israeli scientists have even begun extracting vitamin V12 from the ash produced from methane waste.

This essential vitamin for medicine is synthesized by methane bacteria.

MATERIAL AND METHODS

There are other ways to convert biomass into energy. One of them is enzymes and yeast, which first break down the biomass cellulose into glucose, and then convert it into alcohol. Today, this process is

based on industry. Mutant strains of fungi that synthesize enzymes that break down cellulose at a high rate have been created using genetic and cellular engineering techniques. However, this is a big problem, and it should be borne in mind that high levels of cellulose-destroying microorganisms created by genetic engineering can cause significant damage to natural flora and cellulose-containing products when released into the environment without control.

CONCLUSION

Biotechnological bioenergy focuses on using the energy of non-traditional living organisms as biofuels. Currently, such elements are used in the creation of biological sensors (transmitters) of biosensors.

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