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MICROORGANISMS, ANTHOGONISTIC PROPERTIES, THEIR SUSCEPTIBILITY TO FACTORS OF THE EXTERNAL ENVIRONMENT

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Abstract
We know that any living organism is in close contact with the external environment. Examples include temperature, humidity, light, nutrient environment, concentration, symbiosis and antagonism between microorganisms. This article describes the effect of the above factors on the vital activity of microorganisms.

Keywords: temperature, moisture, light, environment, conditions of oxidation, reduction, antagonism, symbiosis.

Introduction
The influence of factors of the external environment of microorganisms is divided into three groups below. These are below:
1.Physical factors-temperature, humidity, light.
2.Chemical factors-environment, oxidation-reduction conditions,
3.Biological factors are antogonism, symbiosis, which have different effects on growth and development on the amount and activity of enzymes extracted from them.

Effect of moisture: this is one of the most basic external environment factors contributing. 85% of the cell of microorganisms consists of water, in addition, moisture in the growth environment provides access to the cell after the nutrient dissolves in water. Some organisms are intolerant of moisture deficiency, while another group of others that are resistant can be very resistant and maintain viability even for long periods of time.
Hususan is the most optimal conditions for the growth and development of soil microorganisms to be 60% of soil moisture. Microorganisms in the soil are also variously demanding on moisture, including nitrogen-collecting azotobacteria in the soil which are highly moisture-demanding. Such processes completely stop when the activity of microbiological processes is observed when the humidity is optimal, resulting in the formation of resin.
By controlling moisture, products can be stored for a long time. The main reason for this is the low moisture content interrupting the nutrition process of microorganisms, which is expressed in the occurrence of osmotic pressure between the fluid that surrounds the cell of the harmful organism and the external environment. Due to their moisture demand, bacterial groups are much more talacan to moisture than fungi. Fungi, on the other hand, can also thrive in conditions of little moisture.

The effect of the concentration of solute in the nutrient medium: an increase in the knsentarty of the nutrient medium causes a clamping around the cell, which is called physiological dryness. It will not be possible to absorb it even if there is enough moisture in it. The rise in concentrate is caused by salts in solution, these salts do not destroy the microorganism, which is due to the fact that the protoplasm of the cell wall has a high permeability and adapts to this after a certain period of time.

E.Looking at the Mishustin data, it is said that the osmotic pressure of the bacterial cell is 50-80 Atm, that of the fungal cell is 220 Atm. However, not all microorganisms can adapt to the change in osmotic pressure-for example in the saltwater lands of Central Asia, nitrifying bacteria cannot increase the process of nitrification to action without being able to adapt.

The use of high concentration is also more commonly used in the food industry. Based on it, most foods (fish and meat) are canned in a strong solution of NaCl. Many rotting bacteria (Proteus vulgaris, Vas. mesentericus) is highly sensitive and stops developing as early as a 5-10% solution of NaCl.

Based on this, a solution of salt with a concentration of 5-10% was enough for canning some products, but in practice, solutions with a strong concentration are used to achieve a much more reliable result. The meat is salted with 30% NaCl and the fish with 20% NaCl. Many products (meat and fish) are salted with a salt solution or with dry salt itself. In the first method, the products are treated with a solution of table salt of a certain concentration, and in the second method, they are rubbed with a dry salt sprinkle while settling in a container.

Temperature effect: temperature is one of the main factors that determines the speed and possibility of development with a microorganism. Three cardinal defects of temperature dependence are distinguished. These are represented by a minimum, an optimum, and a maximum. At temperatures below the minimum, this organism cannot live. At Optimal temperatures, the body develops very quickly. At maximum temperatures, however, the life activity of microorganisms ends. These cardinal points are different for different microorganisms.

According to the attitude to the Optimal temperature, all microorganisms are divided into three groups.

The temperature Optimum of the first Gruppa is about 20° C. These are psychrophilic microorganisms. These microorganisms can thrive in temperatures ranging from 0° to +25-30° C. The temperature Optimum of the second Gruh will be 20-35° C. This gruppa varies in temperature from 3° C to around 45-50° C for microorganisms. These are called mesophilic microorganisms.

The connecting group is called thermophiles. Examples of bacteria in this group are actinomycetes, some blue-green algae. Thermophilic bacteria develop at high temperatures. These bacteria can be found in A.A.Imshenetsky classifies below.

a) stenothermin thermophiles - for these, the optimum point of temperature is 50-650 C. This group is poorly distributed in nature;

b) the maximum temperature limit for eurythermine thermophiles is 70-750 C. This group is common in nature;

C) for thermotolerant forms, the optimum temperature limit should be 35-450 C.

High and low temperatures do not affect organisms equally. More high temperatures have a

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devastating effect. That is, in this case, the plasma colloid is clotted, and dies. One of the main reasons for this is the amount of water contained in the cell of the microorganism. The less water, the less permeable to clotting and temperature sensitivity.
The resistance of microorganisms to the effects of temperature is also used in their destruction (dysinfection). The two main methods of bacterial loss are based on the effect of high temperatures on extinction.
The first method is called pasteurization, in which the vegetative cells of bacteria are completely destroyed, but their spores do not lose their Vitality. When pasteurized, the liquid is heated to 70° C for 30 minutes, in which only bacteria that do not form spores die.

Effects of light: the effects of sunlight directly and indirectly affect microorganisms. Indirectly, atsir affects the protoplasm of the cell. An indirect effect, on the other hand, affects the environment of the suspended feed.
Among the light rays, the ultraviolet part with a wavelength of 200-300 nm, where the shortwave and photochemical effects are sharply expressed, is most strongly affected. The spores and vegetative cells of most bacteria perceive the action of the Rays in the same way. Only some of them are affected slightly differently from the light. Even between certain strains of bacteria there will be a significant difference in this area.
The chemical changes produced by the light energies are proportional to how long the radiation lasts and the absorption rate of the corresponding Rays. Ultraviolet rays piercing a bacterial cell with a diameter of 3-10 nm kill bacteria and spores of mold fungi when they are irradiated for 10 minutes. The effect of radiant energy increases with the addition of light-shining dye erythrosine to the environment, a phenomenon called photodynamic effect. There is another reduction in time.

Effect of chemicals: divided into two groups according to what chemicals do;
1.Extender-chemicals.
2.Extractor-chemicals.
Pepton, mineral salts form the absorbing chemiotaxis at very low concentrations (0.007—0.0018). The elongating chemiotaxis, on the other hand, produce free acids, alcohols. In the phenomenon of chemiotaxis, the living microbial protoplasm is sensitive to environmental influences and responds to these effects. Some chemicals have microbial effects, which is why they are used to kill germs and are called disinfectants. The effect of these dysenfexion substances on microbes will not be the same either.
Example: weak solutions of ether, alcohol and alkali break down lipoid (fatty) substances contained in the microbial cell. Heavy metal salts (copper cuporose), acids, formalin these are proteins in the microbial cell that, by nesting, disrupt their life activity and lead to destruction.
Some substances: nitric acid, chlorine, chlorine oxac, potassium permaganate and others directly disrupt microbial cells. High-concentration solutions of glycerin, sugar and table salt affect the osmotic pressure of microbes.

The influence of biological factors: an example of these is the rir phenomenon of sambiosis, in which two different microbes live in an environment, two different organisms without resistance to each other. For example, the survival of aerobic microbes with anaerobic microbes. Aerobic microbes absorb oxygen, creating favorable conditions for anaerobic microbes. Anaerobic microbes, in turn, accumulate free nitrogen in the air and convert it into nitrogenous substances.

The fact that microbes create favorable conditions for another germ during their period of residence is called the metabiosis phenomenon. For example, most saprophytic microbes prepare food for nitrophicizing bacteria by breaking the protein down to pepton, amino acids, and other simple compounds.

The fact that two or more microbes promote each other is called the phenomenon of synergism. For example, when the pure culture of the azotobacter grows, it produces 173 mg of heteroauxin. He Is Bass. In addition to micondes, usgan produces 220 mg of heteroauxin. The inability of a second type of germ to develop in an environment where one type of germ has developed is called the phenomenon of antogonism or antibiosis.

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