

Changes That Occur in the Body under the Influence of the Consumption of Waters with a High Chemical Content

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Abstract: Morphological changes formed as a result of the influence of groundwater with a high chemical composition on the internal organs of the body have also been studied, and the results of experimental studies on the effect of bioactive additives have been published. However, the morphological changes that occur in the intestine under the influence of groundwater with a high chemical composition, the level of therapeutic and prophylactic effect on them with bioactive additives have not been studied, and the level of influence of bioactive additives on the level of morphological changes has not been shown.

Keywords: compensator-adaptation, seasonal waters, underground and interstratal waters, active sulfhydryl.

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Any external physical, chemical and biological effects on a living organism lead to changes in the structure and function of the organs of this organism. As a result, the organism responds within the framework of compensatory-adaptive mechanisms by changing clinical and laboratory parameters, including the morphology of organs. Among external influences, one of the most common influences today is the consumption of water of various compositions, which has been proven to have a negative effect on the organs and systems of the body due to excessive amounts of salts, macro- and microelements, and chemical and biological composition.

"Morpho-functional changes in the spleen and thymus as a result of groundwater consumption are a pathological condition of the body, resulting from exposure to doses of chemical elements and compounds exceeding the maximum permissible norms." Changes in the body, including the morphological characteristics of organs, as a result of the consumption of water with a high chemical composition, and the development of therapeutic and preventive measures to reduce the impact of groundwater with a high chemical composition have not lost their relevance[1,5].

Researchers and scientists from leading scientific centers in the world today have conducted and published research on the maximum doses of groundwater with a high chemical composition on the body, the duration of their occurrence of reversible and irreversible pathological processes in the body, the degree of impact of groundwater with a high chemical composition on the body's systems and organs, and the production and use of water purification products for consumption. In addition, groundwater with a high chemical composition leads to morpho-functional changes in the intestines [2,5].

According to their origin, groundwater is divided into infiltration, which is formed as a result of the absorption of atmospheric precipitation, river and irrigation water; condensation, which is formed as a result of the condensation of water vapor in rock layers; sedimentation, which is formed as a result of the burial of seawater during the formation of sedimentary rocks; and igneous waters, which emerge when magma cools or from the earth's mantle. The natural outlet of groundwater to the surface is called a spring and is divided into flowing and boiling springs.

Groundwater is a natural solution containing almost all known chemical elements. Groundwater is divided into fresh (up to 1.0), brackish (1.0-10.0), salty (10.0-50.0) and non-water (more than 50) types according to mineralization (total amount of substances dissolved in water, g/l). According to the temperature, it is divided into cooled (up to 4°), cold (4-20°), warm (20-37°), hot (37-42°), boiling (42-100°) and very hot (above 100°) underground waters.

Morphological changes formed as a result of the influence of groundwater with a high chemical composition on the internal organs of the body have also been studied, and the results of experimental studies on the effect of bioactive additives have been published. However, morphological changes occurring in the intestine under the influence of groundwater with a high chemical composition, the level of therapeutic and prophylactic effect on them with bioactive additives have not been studied, and the level of influence of bioactive additives on the level of morphological changes has not been shown[3,6].

According to the conditions of its location, groundwater is divided into soil water (see Soil water depth), seasonal water (surface water; formed by the absorption of precipitation or irrigation water above water-bearing layers in the aeration zone); groundwater (collected above the first impermeable layer closest to the surface of the earth) and interlayer (aquifers located between non-pressure, pressure, artesian, and impermeable layers).

More than 150 large underground water deposits have been identified in Central Asia. Their annually renewed operational reserve is more than 1500 m³/s, the contribution of fresh water is close to 1000 m³/s, and the rest is mineralized to varying degrees (from 2-3 to 15 g/l). There are more than 40,000 used boreholes in Central Asia, of which about 5,000 are artesian wells with water gushing out; most of them were used to irrigate crops.

Any external physical, chemical and biological effects on a living organism lead to changes in the structure and function of the organs of this organism. As a result, the organism responds within the framework of compensatory-adaptive mechanisms by changing clinical and laboratory parameters, including the morphology of organs. Among external influences, one of the most common effects today is the consumption of water of various compositions, which has been proven to have a negative effect on the organs and systems of the body due to excessive amounts of salts, macro- and microelements, chemical and biological composition. "Morpho-functional changes in the intestines as a result of the consumption of groundwater are a pathological condition of the organism, resulting from the influence of doses of chemical elements and compounds exceeding the maximum permissible norms"¹. Changes in the body, including the morphological characteristics of organs, as a result of the consumption of water with a high chemical composition, and the development of therapeutic and preventive measures to reduce the impact of groundwater with a high chemical composition have not lost their relevance[1,6].

Infiltration water is widespread in nature, the rest is very rare in its pure form. Groundwater is used to provide water to the population, industry and pastures, for irrigation, in medicine (mineral waters), for

heat supply (hot waters), for the production of various salts and chemical elements (iodine, boron, bromine, etc.). Groundwater causes waterlogging and salinization of the land. To combat this, open and closed horizontal drainages and boreholes are dug. Groundwater is widely used in deserts. The Karakum, Kyzylkum and Ustyurt pastures are mainly supplied with groundwater.

Scientific research has been conducted on the clinical and laboratory aspects of the disease caused by exposure to groundwater with a high chemical composition, and scientific results have been obtained, including the effects of various types of groundwater with a high chemical composition on the body and a new approach to its treatment has been developed.

Scientific research has been conducted on the clinical and laboratory aspects of the disease caused by exposure to groundwater with a high chemical composition, and scientific results have been obtained, including the effects of various types of groundwater with a high chemical composition on the body and a new approach to its treatment (Memorial Sloan-Kettering Cancer Center in New York, USA; The Radiation Injury Treatment Network, USA; Medical Scientific Center, RF); morpho-functional changes in the intestine and the pathogenetic role of the immune system in the formation of this pathology have been shown (Bhabha Atomic Research Centre, India; The International Atomic Energy Agency, Austria; Department of Defense's Armed Forces Radiobiology Research Institute, USA); The diagnostic parameters of the disease, their role in the formation, development and outcome of the disease were assessed (European Radiological Data Exchange Platform, Luxembourg; Republican Scientific and Practical Center for Radiation Medicine and Human Ecology, Belarus); experimental studies have proven the dependence of the pathological condition on the occurrence, development and complications of the intestine.

The types of groundwater include the following: according to the location, groundwater is divided into soil water, seasonal water, groundwater and interlayer water. Groundwater is a natural solution containing almost all known chemical elements.

According to its mineralization (total amount of dissolved substances in water, g/l), groundwater is divided into fresh (up to 1.0), brackish (1.0-10.0), saline (10.0-50.0) and brackish (more than 50). According to its temperature, it is divided into cold (up to 4°), cold (4-20°), warm (20-37°), hot (37-42°), boiling (42-100°) and super-boiling (over 100°) groundwater.

Groundwater with a high chemical content is realized only during its impact on the organism, under its influence various morpho-functional changes appear in the organism. Groundwater with a high chemical content can enter the body through the skin, gastrointestinal tract, and respiratory tract. After that, it spreads through the blood and lymph flow to other organs and tissues of the body.

The pathogenesis of groundwater with a high chemical composition is explained by the direct and indirect effect of chemicals on the body. The chemical compounds contained in the water are associated with the accumulation of chemical compounds in the walls of blood vessels and in the parenchyma of all organs and their direct and indirect effect on metabolism. This occurs due to the disruption of physicochemical processes in the affected cells. In this case, the permeability of the cell membrane increases or decreases.

The indirect effect of groundwater with a high chemical composition is explained by the occurrence of radiolysis of water, which makes up 70-80% of the body, when water is ionized, radicals with oxidizing and alkaline properties are formed. In addition, the formation of atomic hydrogen, hydroperoxyl radicals, and hydrogen peroxide is also significant. Free oxidizing radicals enter into an enzymatic reaction, as a result of which active sulfhydryl groups are converted into inactive disulfide compounds. These biochemical processes lead to a decrease in the catalytic activity of enzyme systems, which in turn leads to a decrease in DNA and RNA in the cell nuclei, which disrupts the processes of their renewal.

The spleen mainly fights infection, and also performs the following functions:

- Hematopoiesis. During pregnancy, the fetal spleen produces all the formed elements of the blood. After birth, the spleen produces only lymphocytes. If a person has a malignant type of blood disease (for example, myeloid leukemia) or bone marrow destruction occurs, the spleen's hematopoietic properties are fully restored.
- Storage of erythrocytes. This organ stores 8% of red blood cells.
- Phagocytosis. The ingestion of old or damaged cells, as well as foreign microorganisms and protein-antibodies by special cells (phagocytes) is called phagocytosis.
- Immune reactions. After the ingestion of these antigen cells, the spleen increases the production of blood defense cells - lymphocytes.
- There are several reasons for removing the spleen through surgery:
- Certain types of blood cancer. This can be malignant and non-malignant lymphoma, chronic lymphocytic leukemia, hairy cell leukemia, or any other organ tumor metastasis to the spleen.
- Other blood diseases. These include thrombocytopenic purpura (decreased platelets in the blood) and autoimmune hemolytic anemia (increased red blood cell destruction), and the spleen is removed when medical treatment does not help.
- Hypersplenism. This condition is caused by excessive destruction of platelets and other blood cells as a result of increased spleen activity.
- Splenomegaly. In this case, the spleen becomes excessively large, causing pain and pressing on the stomach, which can cause specific complaints (for example, a feeling of rapid satiety). To reduce such complaints and determine the cause, the spleen is removed.
- Severe trauma. When the spleen is damaged and there is severe blood loss, and the bleeding cannot be stopped, the spleen is removed.
- Infection. This condition is rare, and when purulent foci and echinococcal cysts are detected in the spleen tissue, part or all of the spleen is removed.

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