CHEMICAL COMPOSITION ON THE MORPHO-PHYSIOLOGICAL PROPERTIES OF THE STOMACH

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Abstract: *Water is a strong solvent. In nature, it usually contains dissolved substances (salts, gases). Water is important in the history of the geological structure of the Earth and the emergence of life on it, in the formation of the physical and chemical environment, climate and weather. No living organism can survive without water. Water is an essential part of all technological processes in agriculture and industry.*

Relevance of the topic . Water is widespread in nature. It covers about 3/4 of the Earth's surface. The hydrosphere is the watery part of the Earth, which includes oceans, seas, lakes, reservoirs, rivers, groundwater, and soil moisture. It is 1.4-1.5 billion km³. In the atmosphere, water is in the form of vapor, fog, mist, rain, and snow. About 10% of the land is covered with ice. The lithosphere contains about 1-1.3 billion km³ of water, which is similar to the amount in the hydrosphere . The Earth 's mantle contains a huge amount of water (13-15 billion km³). The water in all living organisms is half the water in the rivers on Earth. All water on Earth interacts with each other and with water in the atmosphere, lithosphere, and biosphere (see Water cycle).

Under natural conditions, water always contains dissolved salts, gases , and organic substances. Their amount depends on the formation and conditions of the water. If the salt concentration in water is up to 1 g/kg, it is called fresh water, up to 25 g/kg - saline, and above - brackish water. Precipitation, fresh water, lake water, and brackish water are less mineralized. The salinity of ocean water is about 35 g/kg, less than that of sea water, and fresh water contains more N, SO, Ca, and Mg ions. As the mineral content of water increases, the concentration of SO, S, Na, and K ions increases.

Dissolved gases in natural water include nitrogen, oxygen, carbon dioxide, natural gases, and sometimes hydrogen sulfide and carbohydrates. The concentration of organic matter in water is low - an average of 20 mg/l in rivers, even less in groundwater, and 4 mg/l in oceans.

2 stable isotopes of hydrogen (H and 2H) and 3 isotopes of oxygen (|6O, O17, |8O), 9 different isotopes of S are known. All the water on Earth contains 13–20 kg of "superheavy" water, which contains the hydrogen isotope tritium (3H) (see Heavy water).

widespread distribution and great importance in human life, water has long been considered a source of life. According to ancient philosophers, water is one of the four elements necessary for life (along with fire, air, and earth). At the same time, water was also considered a conductor of cold and moisture. By the end of the 18th century, water was considered an individual chemical element. In 1781-82, the English scientist G. Cavendish synthesized a mixture of hydrogen and oxygen by exploding it with an electric spark. In 1783, the French scientist A. Lavoisier repeated this experiment and confirmed that water

consists of hydrogen and oxygen. In 1772, the French physicist Deluc determined that the maximum density of water is at 4 °. The important physicochemical properties of water are given in the table.

Water is a universal solvent. Gases dissolve well in it. Since water is an electrolyte, it dissolves many acids, bases , and salts. Water itself is also a highly soluble substance. When hydrogen and oxygen combine to form water, heat is released. The reaction 2H2 + O2 = 2H3O proceeds very slowly up to a temperature of 300°. An explosion occurs at 550°.

and oxygen to a very small extent at temperatures above 1000° (thermal dissociation). At 2000°, the thermal decomposition of water reaches 1.8%, at 3092° it reaches 13%, and at 5000° it reaches 100%. Water also decomposes under the influence of ultraviolet rays (photodissociation) or radioactive rays (radiolysis). When water decays radioactively, hydrogen peroxide and a number of free radicals are formed in addition to H2 and O2. Water enters into combination and decomposition reactions, participates in chemical reactions. Water has its own unusual (anomalous) properties: high surface tension, low viscosity, high melting and boiling points, and its density in the liquid state is greater than in the solid state. The density of water is less than 1000 kg/m³ both at temperatures above and below Q4°. This phenomenon is called the density anomaly of water. The specific heat capacity of pure water is greater than that of all liquids and solids (4.18 JG ·g); therefore, more heat is required to heat 1 g of water by G than is used to heat other substances. This is called the heat capacity anomaly of water. If pure water is carefully cooled slowly, it may not freeze even at temperatures below C (down to -33°). Such "supercooled " water is unstable; if it is shaken or a crystal is dropped into it, it immediately freezes. It has also been shown that pure water can be slowly "superheated " (up to -27°). Superheated water is also unstable; if shaken slightly, such water evaporates, forming a large amount of steam. The water molecule consists of 2 hydrogen and 1 oxygen atoms, and the angle between the bonds is 104.5 ° . As a result of the asymmetrical distribution of electrons around the oxygen atom, the center of the negative electric charge of the electron cloud does not coincide with the center of the positive charge of the oxygen atom. As a result, a large electric dipole moment is created in the water molecule. This manifests the polarization property of water.

A polar water molecule dissolves polar substances well and non-polar substances poorly. Depending on their affinity for water, functional groups can have : hydrophilic (attracted to water), well solvated with water, hydrophobic (repelled from water), and diphilic structures.

Water is a widely used substance. Water is a chemical reagent involved in the production of oxygen, hydrogen, alkali, nitric acid, alcohol, aldehyde, slaked lime and many other chemical products. Water is a necessary component for binding materials. It is used in many production processes as a technological component for boiling, melting, dilution, crystallization . In technology, it is used as an electrical and heat conductor, a working medium in steam engines, and a pressure transmitter.

is the main medium necessary for metabolism in all plants, living organisms , and microorganisms, as well as the substrate for a number of chemical enzymatic reactions.

During photosynthesis, water, together with carbon dioxide, participates in the formation of organic substances and is also a means of formation of living organisms on

Earth. Water ensures the functioning of tissues, the absorption of nutrients and metabolic products (blood, lymph, plant sap) , physical thermoregulation and other processes related to life. Organisms contain a huge amount of water. All fluids and tissues in the human body contain about 65% water by mass. A person can survive hunger for more than a month, but cannot survive water deprivation for more than a few days. Organic and inorganic substances necessary for the survival of an organism are dissolved in water .

The physiological need for water for a person, depending on climatic conditions, is 3-6 liters per day . A large amount of water is required for sanitary and economic needs. Only when sufficient quantities of water are provided from a centralized water system can wastewater and waste be discharged through the water sewer. The sanitary culture of residential areas is determined by the level of water supply (in liters per person per day). In order to prevent the risk of direct or indirect negative effects on the health and sanitary living conditions of the population, the maximum permitted amount of chemicals in water and scientifically based hygiene standards are important.

Water consumed by the population must be epidemiologically safe. It must not contain disease-causing bacteria and viruses.

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