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HYDROCHEMICAL EXAMINATION OF MUASHI AND LENTEKHI MINERAL WATER OF LENTEKHI DISTRICT

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ABSTRACT

Our object of study was the mineral water of Lentekhi, a small town in the village of Muashi, Lentekhi district. Hydrochemical analysis of mineral water of Lentekhi, Muashi, was carried out by us for the first time. The content of $Ca2^{+}$, $Mg2^{+}$, ions, oxidation, dissolved oxygen, dry residue and carbon dioxide have been studied by chemical methods.

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Introduction.

Water is an invaluable resource and has always been considered the primary source of life. It is widely used in many ways to meet the requirements of the law. Purposeful use of water requires in-depth chemical and microbiological examination, determination of its physico-chemical, organoleptic properties and chemical composition, and based on this, quality assessment. Chemically pure water does not exist in nature. As it moves through the earth's crust, water touches many minerals, dissolves them, and carries them all the way through circulation. Natural water is a solution containing substances of various natures and conditions [1].

Mineral waters and their healing properties have long been known. Archaeological excavations show that in the second - third millennium BC they were used for healing. The ancient Greeks already chose soda, sulfur, iron and salt water. Mineral waters have been known in Georgia since ancient times. Vakhushti Bagrationi in his book "Description of the Kingdom of Kartli" has mentioned "hot, salty, healing cures" sources in almost all parts of the country. Interesting information about mineral waters can be found in the travels and records of foreign scientists [2].

The study and rational use and protection of mineral waters is an urgent problem of moderns. The peculiarity of the formation of groundwater is reflected in the chemical composition. Unlike surface waters, they are closely related to rocks, leading to complex micronutrient composition and, in some cases, mineralization. Gaseous composition of groundwater is also difficult, which can be

atmospheric, biochemical and radioactive [3]. Groundwater contains interesting information about the nature of the rocks in contact with them and is one of the geochemical objects of ore exploration.

Groundwater, which is characterized by temperature, peculiar chemical composition and physiological activity, is a mineral water [4]. Degradation of dissolved gases and aeration of water after mineral water rises to the surface of the soil disturbs the acid base and oxidation-restoration balance.

The analyzes were conducted in the Laboratory of Analytical Chemistry of Kutaisi Akaki Tsereteli State University. Methods tested in hydrochemical practice were used for the analysis.

Experiment.

1. Acidity is measured by pH (673 – M). After evaporation of the remaining residue at 1100C.

Hydrocarbons were determine. We used methyl red as an indicator.

A mercurometric method was used to determine chlorides. We used 0.01 mol / eq. Hg_2 (NO_3)

2. We used diphenylcarbazone as an indicator.

Sulfate ions in highly mineralized waters are determined by the classical gravimetric method The precipitated form is $BaSO_4$.

Calcium and magnesium content as well as the total water hardness in the samples are determined by the complexonometric method. The impact of heavy metals was averted by the addition of Na_2S. In parallel definitions. Biogenic substances were determined by photometric methods: - Nessler reagent, - Gris reagent. - with sodium salicylate, and - with ammonium phosphormolybdate (blue complex).

Dissolved oxygen is determined by iodometric method. We used 0.02 mol / eq as a titrant. Solution of concentration. Starch was used as an indicator. To determine the total concentrations of organic matter in water, we used the methods of permanganatometric and bichromatic oxidants.

The content of in the study water is determined by the alkalimetric method. We used 0.01 mol / eq of sodium alkali. We used phenophthalein as an indicator of the concentration solution [5, 6]. The results of the analysis are given in Table 1.

The mineral water of Muashi in Lentekhi district is mineralized on average, due to which their reaction is weakly acidic (varies in the range of 5.22 to 5.42).

Table 1. Results of hydrochemical analysis of mineral water in Muashi village and Lentekhi district

	Name of mineral water	*pH*	Mg/l								
			Dry residue	SO_4^{2-}	Ca^{2+}	Mg^{+}	HCO_3^{-}	Cl^{-}	Dissolved oxygen	Oxidation	CO_2
1	Muashi	5,22	1.33	0,371	107,02	52,41	91,72	23,65	0,0095	4.856	41.23
2	Lentekhi	5.42	1.38	0.332	104,08	54,24	88.56	24.87	0.0097	4, 348	42,17

Assessment of the experiment.

The mineral waters of Muashi and Lentekhi contain more or less ions mentioned above. The dry residue is relatively higher in Lentekhi mineral water of 1.38 mg / l, while in Muashi mineral water it is 1.33 mg / l. SO42 ions contain more Muashi mineral water in 0.371 mg / l, and its content in

Lentekhi mineral water is 332 mg / l. The content of $Ca2^+$ ions in Muashi mineral water is 107.02 mg / l, while Lentekhi Mineral Water contains less $Ca2^+$ ions in the amount of 104.08 mg / l. Mg^+ ions contain more Lentekhi mineral water 54, 24 mg / l than Muashi mineral water 52, 41 mg / l. The content of HCO_3 ions in Muashi water is higher 91.72 mg / l than in Lentekhi Mineral Water - 88.56. The content of Cl-ions in Muashi mineral water is 23.65 mg / l, while its content in Lentekhi mineral water is higher and is equal to 24.87 mg / l. Dissolved oxygen is 0.0097 mg / l in Lentekhi mineral water and less than 0.0095 mg / l in Muashi mineral water. Is equal to 4,348 ml. The content of carbon dioxide in the mineral water of Lentekhi is equal to 42.17 mg / l, while the mineral water of Lentekhi is less and equal to 41.23 mg / l. Research in this area is still ongoing to determine the mineralization and Li^+, Na^+, K^+ ions.

Conclusions.

The content of biogenic substances in the Muash mineral waters investigated by us is much lower than the detection limit. We were also unable to detect sulfide ions by sensitive methods.

Thus, ions, acidity, oxygen content, oxidation and dry residue were first determined in the mineral water of the village of Muashi, Lentekhi district, by chemical and physico-chemical methods. Electrically, it was found that the concentration of ions named above is directly proportional to that of acidic waters.

The ions in the studied mineral waters are within the norm and its use for drinking and medicinal purposes is advisable.

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