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The ecologıcal sıtuatıon of gargar rıver

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Abstract
In the article the results of a complex microbiological investigation of the waters of the Gargar River is given. The physico-chemical and microbiological analyzes of water were carried out mainly in the samples taken in the Agdam part of Gargarcay. Basically, in the physical analysis, water pH, hardness, viscosity, total weight, weight of dissolved substances, sedimentation rate were determined.

Keywords: Gargar, river, ecology, water, microbe

Introduction

The water resources of Azerbaijan are 30.9 km^3. However, 2/3 of it is water entering through transboundary rivers from neighboring countries, and local river water resources are only 10 km^3, which is 0.021% of world river water resources. The 48% of these resources are due to underground waters that are involved in the formation of rivers. The 25% of the world's countries are located entirely in transboundary river basins, and 40% of the world's population lives in these river basins. All continents except Australia have such river basins. The problems related to transboundary rivers are similar in different countries. These are primarily legal and political problems and both technical and hydroecological problems related to them [1, 5]. In the development of human society, water resources have always been at the forefront and played a key role in the search for technology, industry, and agricultural methods.

The use and protection of transboundary rivers and inter-country lakes is one of the front issues, the solution of which should be based on comprehensive cooperation. Because in the process of short or long-term use, these water points may be negatively affected by other countries, and the environmental conditions, economy, and well-being of the third country may be affected.

Over the centuries, man has affected water resources with his activities, turned some areas into deserts, and in some areas expanded wetlands and stimulated soil salinization. In many areas of the world, water scarcity is already felt, especially during the low water period. Only 0.006% of this amount, i.e. 46,800 km^3 of water falls on the share of river waters, and these waters are unevenly distributed on the territory [2, 3].

Unlike other natural resources, river waters have dynamism and self-recovery properties, which creates the impression in people that water is inexhaustible and can provide them for many centuries. But this is not so, and the anthropogenic factor shows its role here.

The length of Gargarchay is 115 km, the area of its basin is 1490 km^2. The mouth of the river is in the Aggol swamps on the right bank of the Kura river. It is formed by the confluence of the Karkijahan, Khalfali and Zarysli rivers flowing from the eastern part of the Karabakh range. Shusha, Khankendi, Aghdam and Aghjabedi regions flow through the territory. It receives Badara (32 km long) and Gushchular (12 km long) rivers from the right, and Ballica (24 km long) rivers from the left. It divides Khankendi (33 km long) and Karkijahan (28 km long) into two places. The 45% of the river's annual flow comes from rain, 27% from snow, and 38% from groundwater. The average annual water consumption of the Akhinjariver is 3.15 cubic meters per second. The 50% of the flow passes in spring, 25% in summer, 15% in autumn, and 10% in winter. The average annual consumption of suspended sediments is 0.29 kg/s, and siltation is 92 g/m^3. Its water is being calcium carbonated has mineralization 0f 300-500 mq/l.

One of the biggest factors hindering efficient use of water resources is pollution of river waters. So, as the demand for water increases, the amount of waste water increases. The increase in waste water leads to the pollution of water resources, making it unusable. The discharge of dirty water into water bodies without treatment damages the water supply of the population, industry, fisheries and agriculture [4, 7].

Due to the widespread use of Gargarchay, its water does not reach the estuary in summer months. A hydroelectric power plant was built at the place where Khalaflychay flows, and a water reservoir was created. HPP is located in the territory of Karkijahan. The villages of Novruzlu, Saybali, Yusifcanli, etc. of Aghdam are located on the banks of the Gargar river. From this point of view, the study of ecological factors of the Gargar river is one of the actual problems of the day.

Materials and Methods

3 water samples were taken from the stations on the route designated for conducting research in these river waters, and more than 10 analyzes were carried out.

The Y.J. Sorokin bathometer was used to obtain water samples. The total number of microorganisms was grown in peptone medium, and the group of coliform bacteria was grown in Endo medium by filtration through a 3Ne membrane filter. The saprotrophic bacteria were cultured by deep inoculation on fleshy peptone agar medium according to the Koch method. The biodestruction of organic matter and determination of oxygen are determined according to modern methods. [6, 8].

The physico-chemical and microbiological analyzes of water were carried out mainly in the samples taken in the Agdam part of Gargar river. Basically, in the physical analysis, water pH, hardness, viscosity, total weight, weight of dissolved substances, sedimentation rate were determined.

The physical analysis of the Agdam section of Gargar river

	I. Water taken from the beginning of the river	II. Water taken from the middle of the river	III. Water taken from the end of the river
pH	8,5	8,15	8,11
	1,3321	1,3321	1,3319
	0,8714	0,8793	0,8807
Viscosity V	8,37	8,63	7,37

Determination of physical properties - Total weight

Row	Volume	Weight (gr)	Standard Distilited (H_2O) (gr)	Water and weight of additives (gr) in the composition	Purity %
№ 1	10000 ml	1.017	1.001	0.016	0.01%
№ 2	1000 ml	1.015	1.001	0.014	0.01%
№ 3	10000 ml	1.008	1.001	0.007	0.01%

Result: (✓) An increase in the weight of water was observed

The weight of the solute

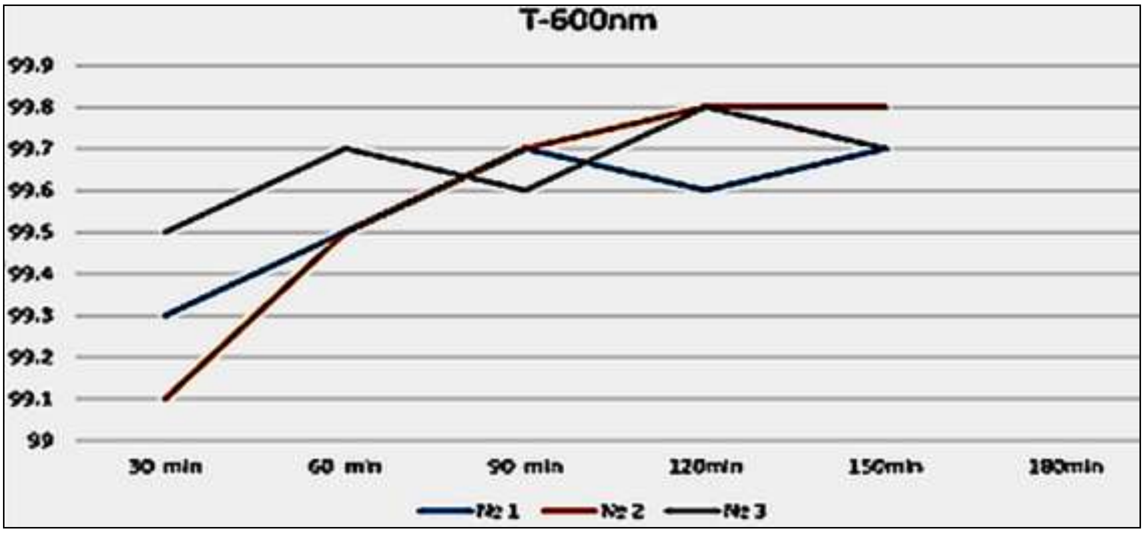
Row	Volume	Wet Weight (gr)	The weight of the solute (gr)	Purity %
№ 1	5000 µl	5.005	0.004	0.01%
№ 2	5000 µl	5.007	0.006	0.01%
№ 3	5000 µl	5.011	0.010	0.01%
St	5000 µl	5.001	0	0.01%

As a result, the weight of elements dissolved in water was determined based on the table above. A dye was added to observe the analysis.

Decline speed

Row	Row № 1 T 600 nm	№ 2 T 600 nm	№ 3 T 600 nm
30 thousand	99.3	99.1	99.5
60 thousand	99.5	99.5	99.7
90 thousand	99.7	99.7	99.6
120 thousand	99.6	99.8	99.8
150 thousand	99.7	99.8	99.7
180 thousand	-	-	-

Decline speed



Note: Particles in water tend to settle over time.

Graph 1: Graphig During microscopic observation after planting

In the first example: The bacteria and fungi were detected in the sample after cultivation. Bacteria include bacilli and cocci. The biological activity of the sample is small.

In the second example: The bacteria were detected in the sample after inoculation. Bacteria include bacilli and cocci. After planting, fungus was detected (the amount of fungus was observed in large numbers). The sample has a lot of biological activity. (A factor that causes water pollution is assumed).

In the third example: The bacteria were detected in the sample after inoculation. Bacteria include bacilli and cocci. After planting, fungus was detected (the amount of fungus was observed in large numbers). The biological activity of the sample is small.

Conclusıon

1. Physico-chemical, Bioculture and Spectrophotometric analysis During the initial microscopic observation, cells with a small amount of algae and other chlorophyll were observed. The paramecium and amoeba from protozoa, mycelium from fungi, algae and other cells with a small amount of chlorophyll were observed.
2. Due to the turbidity of the Gargar river, primary organic matter is not synthesized by phytoplankton. Therefore, the main organic substances in water are of anthropogenic origin and rich in proteins.

Offers

1. Taking into account that our water resources will decrease further in the future due to various climate changes, various steps should be taken and adaptation measures should be implemented both within the country and at the cross-border level with neighboring countries.
2. All water users should use water efficiently to avoid serious water shortages in the future. Water losses in water supply facilities and households should be prevented. In modern technology and water-saving equipment should be used in agriculture and industry.

References

1. Mammadova VF. The effect of biodestruction of autochthonous-allochthonous organic matter on the oxygen regime of the Shamkir reservoir. Modern problems of biological resources of the Caspian Sea. International E-conf dedicated to the 90th anniversary of Azerbaijan ETBT Institute. Matt. Astrakhan; c2003. p. 141-143.
2. Mamedova VF. Ecological state of the primary production of phytoplankton of the Shamkir reservoir. Gyandjirskyi NC ANAS: Sat. News. 2004;(14):5-7.
3. Khalilov ShB. Water reservoirs of Azerbaijan and their ecological problems. Baku; c2003. p. 310.
4. Mammadova VF. Contemporary ecological condition of the Shamkir reservoir. Bulletin of Science and Practice. 2021;7(8):78-82. https://doi.org/10.33619/2414-2948/69
5. Mamedova VF, Aslanova EA. The total number of bacteria in water and bottom sediments of the Mingechaur reservoir. Azerbaijan National Academy of Sciences, Department of Biology and Medical Sciences, Institute of Microbiology. Materials of the Republican scientific-practical conference (March 29-30, 2022, Baku) dedicated to the 90th anniversary of the birth of Academician Mammad Salmanov and the 50th anniversary of the ANAS Institute of Microbiology "New trends and Innovation: Development Perspectives of Microbiology in Azerbaijan". Baki. 2022. p. 23-26.
6. Mamedova VF, Aslanova EA. Загразнение tributaries of the Kury-Khramchay and Akstafachay rivers. Scientific and practical magazine "Sovremennaya nauka" Actual problems of theory and practice Series Natural and technical sciences. Moscow. 2022;7-2(Jul):33-35. DOI: 10.37882/2223-2966.2022.07-2.12. Available from: http://nauteh-journal.ru/files/b88215ed-6f3f-48a8-8a00-b7bab9805801
7. Sergio AM, Bustos TY. Biodegradation of wastewater pollutants by activated sludge encapsulated inside calcium-alginate beads in a tubular packed bed reactor. Biodegradation. 2009;20(5):709-715. https://doi.org/10.1007/s10532-009-9258-

8. Ramlal PS, Hecky RE, Schiff SL, Bootsma HA. Sources and Transport of Organic Matter to Lake Malawi. Proceedings of the 45th Conference on Great Lakes Research. p. 99-100.
9. Sorokin YuI. Bathometer for sampling water for bacteriological analysis. Bull. Institute of Biology of Reservoirs. 1960;(6):53-54.