method will be used in our further investigations with succinate in biological samples after ischemia/reperfusion injury in mitochondrial and cytosolic fractions. The procedure of method validation is going to be performed.

ECOLOGICAL AND TOXICOLOGICAL CHARACTERISTICS OF WATER OBJECTS OF KRASNOGRAD DISTRICT OF KHARKIV AREA

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Introduction. The current ecological state of small rivers, the sources that feed them, and the quality of water resources are determined in Kharkiv region as unsatisfactory. This is primarily due to neglect of small rivers, the change in their hydrological regime, chemical and biological contamination of both rivers and their sources of nutrition, a violation of natural river ecosystems.

Krasnograd region, as in the whole Kharkiv region, has a low level of water resources, therefore the research of water sources, which are under constant anthropogenic influence, is important: development of gas condensate fields, chemical reagents penetrating into water, oil, fuel and lubricants, rare products fountains of wells, as well as agricultural facilities and other factors.

Aim. Determination of the ecological status of water sources of Krasnograd district of Kharkiv region by chemical analysis and biotesting method for supplementing the general catalog of the studied sources.

Materials and methods. The paper presents the results of research on spring water by methods of biotesting on crustaceans *(Ceriodaphnia affinis Lilljeborg)* and chemical analysis. Crustaceans *Ceriodaphnia affinis Lilljeborg* used as the most sensitive object to a wide range of chemicals and biological testing method is an effective form for use in water protection practices in conducting toxicological evaluation and quality control of surface and drinking water. We have studied 8 sources of Krasnograd district of Kharkiv region. With the help of chemical analysis methods, sanitary-chemical indicators of safety and quality of drinking water in three natural sources, which have the greatest demand from the local population, namely: in Oktyabrske village, in Berestovenky village and in Khomutovsky park. Their composition was compared with the chemical composition of water of the water supply of the 3rd Krasnograd microdistrict. Monitoring of the quality of drinking water of these sources today is an extremely topical issue not only for the residents of the city, but also for residents of the entire Krasnograd district.

Results and discussion. According to the results of biotesting on crustaceans, the toxicity in the water of the source № 2 in Berestovenky village and in the water source in Khomutovsky park in Krasnograd city was established.

The results of the conducted chemical studies were compared with the historical certificate of the source of spring water of estate of captain Kovalevskaya S. M. (1804–1809) in Kostyantynograd district of the Poltava province (there is Oktyabrske village of Krasnograd district now). According to the certificate of Ferdinand Gise, who was Professor of Chemistry of the Kharkiv University (1806), the water source of Oktyabrske village of Krasnograd district had high rates of mineralization, was composed of salts such as Glauber's salt ($Na_2SO_4 \bullet 10H_2O$), bitter salt ($MgSO_4 \bullet 7H_2O$) and table salt (NaCl). The conclusion of the scientist was unambiguous: thanks to salts dissolved in water, it can be used as mineral, however, to use only on the advice of a doctor.

The research results of 2014–2017 confirmed the previous findings of Professor Ferdinand Gise, the water from the source of Oktyabrske village for sanitary-chemical indicators of safety and quality exceeds the norms of general hardness 1.3 times and the content of sulfates in 1.1 times; according to the physiological completeness of the mineral composition of drinking water, an excess of calcium, magnesium, dry residue, and also the index of total alkalinity exceeds the maximum permissible concentration (MPC) by 1.3 times.

According to the results of the research of water samples from the source № 2 of Berestovenky village of Krasnograd district, an exaggeration of the MPC for physical and chemical indicators was

determined. It was established that the safety and quality standard for sulphate content was 1.2 times higher and 1.6 times the exaggerated norm of total hardness; and according to the indicators of physiological completeness of the mineral composition of drinking water, there is a discrepancy with the norms of calcium, magnesium, dry residue, total alkalinity.

Chemical analysis of water from a source in Khomutovsky Park showed similar results: exceeding the safety and quality standard by sulphate content by 1.5 times, an exaggeration of the norm of total hardness in 2.1 times; according to the indicators of physiological completeness of the mineral composition of drinking water, inconsistency with norms is established by the following indicators: calcium content, magnesium content, dry residue, total hardness, total alkalinity. Also, water from the source in the Khomutovsky park has an excess of sanitary toxicological index, namely the content of nitrates in 1.2 times, which makes this water dangerous for human consumption.

Conclusions. 1. The established maximum MPC in the sources investigated may be natural or result of anthropogenic impact. 2. In order to determine the reason for the unsatisfactory quality of the examined water, monitoring of the selected sources should be monitored further. 3. To prevent water pollution of the environment must strictly follow basic safety precautions, the operation mode of the process gas condensate fields, agricultural and other facilities to carry out measures for improvement of source water quality which meets health standards of consumption.

STUDY OF IONIZATION CONSTANTS FOR SECNIDAZOLE IN AQUEOUS SOLUTIONS AND MIXTURES OF WATER AND AMPHIPHYLIC SOLVENTS

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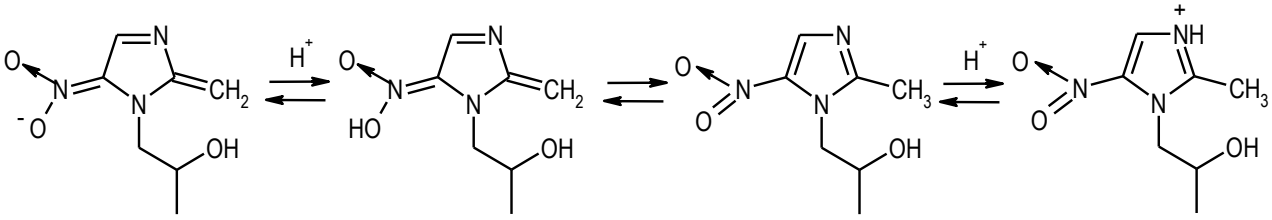
Introduction. Secnidazole is one of the medicines from the group of 5-nitroimidazoles, which is characterized by a prolonged serum half-life; it is widely used for treatment of infectious diseases caused by Protozoa.

Aim. To study acid-base equilibria in aqueous solutions and mixtures of water and amphiphylic solvents such as isopropanol, acetonitrile and ethanol for secnidazole and determine the corresponding ionization constants.

Materials and methods. Secnidazole was of pharmacopoeial purity. All spectrophotometric measurements were carried out using a single beam UV/VIS spectrophotometer SPEKOL®1500 (Analytik Jena AG, Germany).

Results and discussion. Protolytic transformations of secnidazole in the solutions containing water are described by the following scheme:



To study the acid-base equilibria of secnidazole in aqueous solutions and mixtures of water and amphiphylic solvents we investigated changes in its UV-spectra, which were observed when gradual changing in the solution pH.

Four isobestic points, which characterize two protolytic equilibria, are observed in UV-spectra of secnidazole in the pH range from 2 to 12 (buffer solutions), as well as in the solutions of hydrochloric acid (up to 4 mole/L) and sodium hydroxide (up to 8 mole/L). The anionic form R (λ_{max} at 240 and 294 nm) is presented in the strong alkaline medium (> 4 mole/L NaOH), when subsequent decreasing the pH value the