UDC 574.24:556.115

ASSESSMENT OF SOME PARAMETERS OF BIOLOGICAL QUALITY OF THE WATER IN THE CITY OF KROPIVNYTSKYI

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The regional centre of Kirovograd region the city of Kropivnytskyi is located in one of the poorest on surface water resources areas of Central Ukraine.

An interesting feature of the city is that water for household purposes and recreational water ecosystem are completely different natural sources of water.

The water supply by 70% is carried out by "Dnipro-Kirovohrad" with the water withdrawal in the city of Svitlovodsk of Kremenchuk Reservoir (the Dnipro river). The rest of the water supply is provided from the local and decentralized sources. Recreational needs of the city are provided by the Inhul river and its tributaries from the catchment system of the Southern Bug river.

The aim of the work is to compare the biological buffer functions of aquatic ecosystems of the middle stream of the Dnipro river near the water intake and the Inhul river in Kropyvnytskyi.

In most cases, there is no significant difference between the chemical quality of water from "Dnipro-Kirovohrad" and from the local sources.

For the comparative assessment of biological quality of the water from natural sources we used a standard methodology of ichthy-patological testing. The specific criteria of the testing of biological quality of the water were the parameters of the combined virulence and pathogenicity of microorganisms for fish in a particular environment during a standard unit of time.

To assess the quality of the environment we chose environmental and immunological tests on the representative of local fish fauna that has equal characteristics for the Dnipro and Inhul. As the experimental facility we used the European bitterling fish (Rhodeus amarus) in its second year of life and with the length of 3.5-4 cm. This fish has its presence throughout Kirovograd region, it is omnivorous,

carries over a wide range of temperatures compared to other species and it is rather stress resistant. For the experiment we caught 30 species of the same size, with no visible signs of external damage and impressions of diseases and parasites. After three days of quarantine the fish were divided into three groups and placed in separate containers (each 20 liters) at 18°C. The composition of the environment was: water the Dnipro river (Kremenchuk reservoir, Svitlovodsk); water from the Inhul river (Lelekivske reservoir, Kropyvnytskyi); the control (a mixture of 50/50% of pooled and distilled water).

Within 5 days of keeping the fish in those conditions we did not notice considerable differences in their health and activity. After 5 days we added 2 ml of an aqueous suspension of mucus of a diseased on saprolegniosis carp in each of the containers. The results of the following 10 days are the following: 100% of fish which were in the water sample from the Dnipro river survived; the morbidity level was 40%; 5 days of symptoms; healthy fish at the end of the experiment was 100%. 100% of fish which were in the water sample from the Inhul river survived; the morbidity level was 50%; 6 days of symptoms; healthy fish at the end of the experiment was 100%. 80% of the fish in the control sample survived; morbidity level was 80%; 9 days of symptoms; mortality 20%; healthy fish at the end of the experiment was 75% of the survived.

Thus, the morbidity of fish was directly influenced by a set of ion composition and bacteriological content of the water: in natural water there are enough bacteria which are in antagonism with ichthy-patohennym fungus; while laboratory environment did not contain protective bacterial background. But it is clearly seen that protective properties of the Dnipro water are better than the Inhul water. Thus, the biological parameters of quality of the water from the Dnipro (Kremenchuk reservoir, Svitlovodsk) show its best features to protect populations of fish fauna from the effects of ichthy-patohennyh microorganisms. In general, biological quality of the water of both surface sources can be considered quite high which is markedly different from biologically inert control. These properties are important for water users of natural ponds with recreational purposes.