Quantitative accounting and qualitative characteristics of phytoplankton in surface reservoir of the Bukhara region

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Hydrobionts of various water bodies take part in the circulation of matter and energy, in the accumulation of bottom sediments, and are also of great medical and social importance due to the use of numerous surface water bodies for household and drinking and cultural and domestic purposes [1, 3]. For this reason, the definition of phytoplankton [9,10,11]. is mandatory according to O'zDSt 950-2011 “Drinking water. Hygienic requirements and quality control” (GOST) and O'zDSt 951-2011 “Sources of centralized utility and drinking water supply. Hygienic, technical requirements and selection rules" (GOST).

Constant monitoring, assessment of the variability of the microbial and chemical composition of water in water bodies is of great importance [6].

Changes in the chemical, mineral composition of water affect the microbial composition of water in reservoirs. [7].

The purpose of this study is to study and evaluate the main qualitative and quantitative characteristics of phytoplankton in the studied areas of surface water bodies in the Bukhara region.

Materials and methods. The composition, abundance, distribution of phytoplankton in the surface (open) water bodies of the region we study (Bukhara region of the Republic of Uzbekistan) are due to unequal hydrological, hydrochemical conditions and anthropogenic impact.

In biological studies, the bathometric method was used. Phytoplankton was collected with a plankton net of silk gauze №76. For "soft" fixation of phytoplankton samples, Lugol's solution was used (up to a slightly yellow color) followed by the addition of 40% formalin (10 ml of 40% formalin for 0.5 l of the sample). It was taken into account that high concentrations of this fixative cause deformation of algae and a change in the color of their pigment [8].

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Phytoplankton sampling was carried out according to generally accepted algological methods [5, 8], and determinants were used to identify the species composition of microalgae [10, 11].

The sample taken in a polyethylene bottle was fixed with 40% formalin and Lugol's solution; the sample number, date, water body, by whom and in the presence of whom the sample was taken were indicated on the label. Standard water sampling horizons were: 0 (surface); 0.5; 1.0; 2.5; 5 m

Under conditions, the sedimentary method was used for phytoplankton samples. In laboratory conditions, the sedimentation method (sedimentation) was used to concentrate the samples, then the filtrate was slowly sucked off by a siphon through a double layer of plankton net from silk gauze No. 76, which contributed to the preservation of the fine structures of algae.

The compaction of the taken sample was carried out in 2 stages: from 0.5 l (500 ml) to 0.1 l (100 ml). Then, after secondary settling (no more than 5 days), the solution was sucked off again. Poor samples (winter-spring) were brought to a volume of 10 ml (usually up to 20 ml), very rich samples (summer during the "blooming" of blue-green) - up to 50 ml, sometimes even up to 100 ml).

Results of the received researches and their discussion.

1. During the reconnaissance trip, phytoplankton samples were taken, in which 75 species, varieties and forms of algae were found: diatoms (Bacillariophyta) - 34 species; green (Chlorophyta) - 20 species; blue-green (Cyanophyta) - 15 species; dinophyta (Dinophyta) - 5 species; euglenoids (Euglenophyta) - 1 species

The obtained hydrobiological information of the studied reservoirs of the Bukhara region testified that anthropogenic factors, especially pollution, cause changes in the composition, structure and ecological state of aquatic biocenoses of various depths, expressed in a change in the dominant complexes of organisms, simplification of the ecological structure, the appearance of highly saprobic species.

2. It was revealed that the highest total abundance of phytoplankton in water samples of both reservoirs was Cyanophyta (6500.00x103 cells/l and 706.250x103 cells/l, respectively), and the highest phytoplankton biomass was noted in Bacillariophyta (187.800 mg/l) and Chlorophyta (188.400 mg/l). At the same time, Englenophyta and Dinophyta were not found in water samples from the Kuyumazar reservoir.

3. It has been proved that planktonic freshwater-brackish-water b-mesosaprobic forms prevailed in phytoplankton samples of Lake Tudakul; brackish-water b- and b- and α-mesosaprobic algae species prevailed.

4. The increased abundance of phytoplankton was created mainly by representatives of colonial and filamentous blue-green algae of the family Oscilatoriaceae, and widespread diatoms Synedra, Fragilaria, Navicula, Nitzschia and green desmids, protococcal algae.

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