



STUDY OF ANTIBIOTIC RESISTANCE OF CULTURES ISOLATED FROM SURFACE WATER

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Introduction. The water of seas, oceans, rivers and lakes, as well as soil, is a natural environment for the existence of many types of bacteria, fungi, protozoa and microscopic algae. While groundwater may contain individual microorganisms, the primary sources of infectious disease pathogens are humans and warm-blooded animals. These sources release pathogens into the environment through fecal or airborne droplets, along with numerous representatives of the normal microflora found in the intestines and upper respiratory tract. Therefore, sanitary indicator microorganisms for various environmental objects are selected from representatives of normal microflora. Bacteria of the *Escherichia coli* group are accepted as sanitary indicator microorganisms for water in all laboratories of the world. Among *Escherichia coli* group, a group of coliform bacteria is singled out, and within it – faecal coliforms (FC), which break down lactose at 44.5°C. They are an indicator of fresh fecal contamination. To determine it, you can use *Enterococcus faecalis*, which dies relatively quickly in the surrounding environment. In a comprehensive sanitary and microbiological examination of water, parameters such as total microbial count, the presence of the *Escherichia coli* group, *E. coli*, enterococci, staphylococci, and pathogenic microorganisms are typically determined.

The aim. The work involves studying antibiotic resistance in bacteria isolated from surface water reservoirs.

Material and methods. Isolation and identification of *Escherichia coli*, *Pseudomonas aeruginosa*, *Enterococcus faecalis* from water was carried out in accordance with current regulations. The sensitivity of isolated cultures to antibacterial drugs was determined by the disc diffusion method. The study and interpretation of the results were carried out in accordance with EUCAST recommendations.

Results. In the summer period, we examined 78 water samples taken from lakes and reservoirs of Fastiv and Bucha districts of Kyiv region. All the tested samples did not meet the established norms according to such indicators as: coli-index, enterococci index. The presence of lactose-positive *E. coli* (≥ 5000 CFU/in cubic dm) was established in 24 examined samples. *Proteus* spp. was found in 42 samples, of which 27 were *P. vulgaris* and 9 were *P. mirabilis*. *E. faecalis* was detected in 48 samples. The obtained results indicate an unsatisfactory sanitary condition of the studied reservoirs, since according to the current regulatory and technical documents recommending the water quality of surface reservoirs, the presence of *E. faecalis* is not allowed and the number of lactose-positive *E. coli* should not exceed 5000 CFU/cubic. dm. Cultures of *E. coli*, *E. faecalis* and *P. aeruginosa* isolated from water bodies are mainly sensitive to natural inhibitors. 55% of *E. coli* cultures were resistant and moderately resistant to tetracyclines, chloramphenicol, and furazolidone; 66% – to polymyxin B, 15% – to penicillins. 55% of *E. faecalis* cultures were resistant or moderately resistant to individual fluoroquinolones (norfloxacin, levofloxacin, gatifloxacin, ciprofloxacin); 33% - to gentamicin. 45% of cultures were adherent to vancomycin.

Conclusions. Water is a risk factor for the spread of pathogenic bacteria resistant to antimicrobials.