

SCREENING OF MARINE MICROORGANISMS RESISTANT TO ACTION OF DECA (ETHYLENE GLYCOL) MONOOCTYLPHENOL ETHER

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Synthetic surfactants are a part of all domestic and most industrial wastewater. 95-98% of the total amount of detergents used in Ukraine are synthetic detergents based on surfactant mixtures, which, as a rule, are characterized by low biological decomposition and because of their chemical nature have a negative impact on water bodies. Getting into water, synthetic surfactants actively participate in the processes of redistribution and transformation of other pollutants, activating their toxic effect. Therefore, for today, the actual task of biotechnologists remains the search for new microorganisms with increased resistance to these compounds and the ability to destroy them. The purpose of this work is to screen microorganisms isolated from the sea water of the Odesa coast in the zone of splash (psammoconture), resistant to the action of deca (ethylene glycol) monoethylphenol ether (nonionic surfactant, Triton X-100) in 2016, and to carry out biotechnological indicators for selection of the most active strains of microorganisms-destructors of compounds with phenolic fragments.

To isolate a specific microbiota, a "hungry" agar was used, in which Triton X-100 was added at a concentration of 1%. The cultivation was carried out at a temperature of 30 °C for 30 days. The presence of growth on Petri dishes and the zones of medium enlightenment indicated not only the stability of strains to Triton X-100, but also indicators of destructive activity-the ability of microorganisms to use a surfactant as the sole carbon source.

The results of the research indicate that strains Nos. 64 and 65, isolated from the pore water of the psammocontura in the area of discharge of urban wastewater into the Black Sea aquarium, exhibited a high level of resistance and destructive activity with respect to Triton X-100. After 7 days, on the nutrient medium containing a nonionic surfactant, the appearance of bacterial colonies was registered in an amount of 3-9 colony-forming units, respectively, after 10 days their number increased 4-7 times, and after 30 days reached 58 (strain No. 64) and 83 colony-forming units (strain No. 65). Among the strains (Nos. 66-68) isolated from the pore water of the psammoconture in a relatively clean area of the water area (at the Hydrobiological Station), only strain No. 66 had a high destructive potential with respect to Triton X-100 in comparison with strains No. 67 and No. 68. The number of colonies grown on "hungry" agar on the 30th day of cultivation of strain No. 66 reached 42 colony-forming units.

The screening of microorganisms isolated in 2016 from the coastal zones of the Black Sea made it possible to select three biochemically active strains (No. 64, No. 65, No. 66) resistant to deca (ethylene glycol) monoethylphenol ether. Selected strains of microorganisms are non-pathogenic, can be used in biotechnologies for cleaning the environment from nonionic surfactants and other organic compounds with phenolic fragments. Their identification is planned in the future.