

## BIODEGRADATION OF PHENOL BY COLLECTIBLE STRAINS OF BACTERIA OF THE GENUS *PSEUDOMONAS*

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Phenol and its chemical derivatives are essential for production of polycarbonates, epoxies, Bakelite, nylon, detergents, herbicides such as phenoxy herbicides, and numerous pharmaceutical drugs. Phenol is toxic. Refers to highly hazardous substances (hazard class II). Threshold limit value of phenol in water is 0,001 mg/l. The most perspective for purification of water from pollutants are microbial technologies.

The aim of this work was to evaluate the activity of phenol destructive collection strains of bacteria of the genus *Pseudomonas*.

Materials and methods. Collectible strains of bacteria *P. cepacia* ONU327 (isolated from petroleum contaminated soil), *P. fluorescens* ONU328, *P. maltophilia* ONU329 (isolated from petroleum contaminated seawater) served as the object of the study. The cultivation of microorganisms performed under aerobic conditions for 5-40 days at 4, 18 and  $30 \pm 2$  ° C in liquid mineral medium that called M9 consisting of the following composition (g / l):  $\text{KH}_2\text{PO}_4$  – 1,5;  $\text{Na}_2\text{HPO}_4$  – 3; NaCl – 5;  $\text{NH}_4\text{Cl}$  – 1; glucose - 2; peptone - 10; yeast extract - 5; (pH 7,0-7,2). Concentration of phenol- 300 mg / l. To determine the concentration of phenol photometric method with 4-aminoantipyrine has been used. The results were obtained on photoelectric colorimeter (FEC) at the wavelength of 540 nm.

The results of research. It is found that the strain *P. cepacia* ONU327, that has been isolated from petroleum contaminated seawater, showed the highest destructive activity- after 5 days of exposure, the degree of degradation of phenol reached 97.6%. Increasing the temperature to 30 ° C and 18 did not lead to increased activity of destructive bacteria.

Collectible strains of bacteria *P. fluorescens* ONU328 and *P. maltophilia* ONU329 had less destructive potential. The strain *P. maltophilia* ONU329 at 18 ° C after 11 days resulted in a decrease in the concentration of phenol 68.1%, the strain *P. fluorescens* ONU328 at 30 ° C after 18 days also resulted in a decrease in the concentration of phenol 93,5%.

Conclusions. Collectible strains of bacteria *P. cepacia* ONU327, *P. fluorescens* ONU328, *P. maltophilia* ONU329 possess a pronounced activity against destructive phenol. In the production of the new biological preparation of a wide temperature range (from 4 to 30 ° C) it is advisable to use a consortium of 3 strains.