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POSTER

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Magnetic oil degrading bacteria *Alcanivorax borkumensis*

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The main source of marine pollution is oil spills by crude oil. Impact of oil spills on the marine environment is enormous; therefore oil spill remediation research has attracted the attention of scientists. Recently, among marine organisms was found a group of oligotrophic bacteria, which are used just petroleum hydrocarbons as carbon and energy source. *A. borkumensis* is representative of hydrocarbon classic group of bacteria which metabolism adapted to degradation of hydrocarbon of oil. In our laboratory we give to living objects the paramagnetic properties for creating "controlled" cells. Magnetic cells" can be easily remove from the substrate and collect in a complex three-dimensional system. In this work we are formed the "magnetic bacteria" cells and investigated the effect of magnetic nanoparticles stabilized by polymer on oil-degrading bacteria *Alcanivorax borkumensis*. "Magnetic cells" were produced simply by mixing the suspension of polymer-stabilized magnetic nanoparticles and cell suspension. After modification the cells get a brown color. The structure and morphology of the cells were investigated by various microscopy techniques: AFM, TEM and SEM. Each type of microscopy allowed getting different characteristics of "magnetic" cells. A number of standard methods were used for assessing the impact of magnetic nanoparticles on bacteria cells: growth curves, resazurin test, spot-test. The results of these analyzes are consistent with each other and point to preservation of viability of the "magnetic bacteria". It was also shown that after the modification by magnetic nanoparticles the bacterial cells acquire paramagnetic properties. This study was supported by Russian Science Foundation grant No 14-14-00924."