

THE MINISTRY OF EDUCATION OF THE REPUBLIC OF BELARUS
BELARUSIAN STATE UNIVERSITY
FACULTY OF BIOLOGY
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HU Meng Die

CHARACTERIZATION OF BACTERIA
***RHODOCOCCUS PYRIDINIVORANS* STRAIN 5AP**
AS AN EFFECTIVE AGENT FOR BIOREMEDIATION
OF HYDROCARBON-CONTAMINATED SOILS

Summary of Master Thesis

Specialty 1-31 80 01 Biology

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SUMMARY

Key words: CRUDE OIL, DIESEL OIL, HYDROCARBON, DEGRADATION, *RHODOCOCCLUS*, *ALKB2*, EFFICIENCY.

The subject of the research was a *Rhodococcus pyridinivorans* strain 5Ap and variants after inactivation of the genes *hrcA*, *groELS*, *dnaJ*, *alkU*, *alkB2*.

The aim of master thesis is the functional and bioinformatical analysis of bacteria *Rhodococcus pyridinivorans* strain 5Ap genes related with hydrocarbon degradation.

The results and their novelty. We show that the strain *Rhodococcus pyridinivorans* strain 5Ap can survive at the high concentrations of crude oil (20 % w/w). The variant of bacteria with inactivated *alkB2* gene was created by insertion mutagenesis. Analysis of growth and diesel oil (1 mL/L) degradation effectiveness for 7 days show that mutation in genes *hrcA* and *groELS* don't effect on diesel oil degradation, when inactivation of *dnaJ*, *alkU*, *alkB2* lead to decrease of diesel oil degradation effectioveness. Finally, the bioinformatics method was used to analyze the genes related with hydrocarbon biodegradation and to construct the phylogenetic trees.

Structure. The master paper contains 52 pages, 11 tables, 13 figures, and 71 references.