Institute for Gifted and Talented Children and Youth, Belgrade
Institute of Molecular Genetics and Genetic Engineering, University of Belgrade
Regional Center for Talented Youth Belgrade II

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ABSTRACT BOOK & PROGRAM

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OP5

CHARACTERIZATION OF *KLEBSIELLA VARIICOLA*, ENVIRONMENTAL ISOLATE WHICH CAN REDUCE CONCENTRATION OF PERFLUOROALKYL COMPOUNDS IN LABORATORY TESTS

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Persistent Organic Pollutants (POPs) are chemical substances which canbioaccumulate in the food chain and cause adverse health effects in humans and wildlife. Perfluoroalkyl compounds (PFASs) are chemicals that do not occur naturally, but because of their properties such as thermal and acid resistance, water and oil repellency, they are used in various industries and thus ends in the environment. Currently, the two most persistent and toxic PFASs are perfluorooctanoic acid (PFOA, $C_7F_{15}COOH$) and perfluorooctanesulfonic acid (PFOS, $C_8F_{17}SO_3H$). PFOS including the form of salts and its precursor, perfluorooctanesulfonyl fluoride, are classified as POPs according to the Stockholm Convention on POPs. Most traditional techniques for remediation of soil and sediments polluted with POPs chemicals, such as solvent extraction followed by thermal desorption, the use of hydrogen peroxide or thermal alkaline degradation are not suitable for the treatment of PFASs pollution.These methods require expensive excavation operations and transportation of contaminated materials for *ex situ* treatment and involve high energy consumption. Therefore, the focus now shifts to the development of cost-effective biological treatment of contaminated material, the use of plants and microorganisms to transform or degrade pollutants. Biological treatments known as bioremediation although requiring moretime, is cheaper than the physical and chemical methods and more selective. The aim of this work was to conduct microbiological and biochemical characterization of *Klebsiellavariicola*, bacterial strain isolated from environment polluted with PFOS. Preliminary tests have confirmed that this bacterial isolate can reduce the level of PFOS under laboratory conditions. However, after incubation with PFOS, expected PFOS metabolites were not detected using LC-MS/MS. It is assumed that the reduction is a consequence of adsorption or absorption within the cell. Thus isolated strain was analyzed in detail using microbiological, biochemical and techniques of molecular biology. Cell membrane fatty acid composition was analyzed using comprehensive two-dimensional gas chromatography-mass spectrometry (GCxGC-MS).