23rd Congress of Chemists and Technologists of Macedonia

BOOK of ABSTRACTS

8-11 October 2014

Ohrid, Republic of Macedonia

Miroslav M. Ivanov
Oct. 8th, 2014, Ohrid

Сојуз на хемичарите и технолозите на Македонија

Society of Chemists and Technologists of Macedonia

XXIII Congress

with international participation

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8-11 October 2014
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Metropol Lake Resort

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THE INFLUENCE OF COMMERCIAL DETERGENT AND INDIVIDUAL COMPONENTS OF DETERGENT ON METABOLISM OF *Penicillium verrucosum*

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Production and consumption of detergents in the world is constantly increasing, so they represent a significant source of environmental pollution. Discovery and identification species, which are tolerant to the presence of detergent in aquatic ecosystems, is significant for wastewater treatment and bioremediation. The influence of commercial detergent ("Merix", Henkel, Serbia) and individual components of detergent (sodium tripolyphosphate and ethoxylated oleyl-cetyl alcohol) of 0.01% concentration on metabolism of fungus *Penicillium verrucosum* Dierckx was in the focus of this study. The fungus was isolated from detergent contaminated wastewater sample originating from households (river basin of Lepenica, Kragujevac, Serbia). Fungus was cultivated in liquid Czapek Dox's growth medium with addition of mentioned pollutants at a concentration of 0.01%. During exponential growth of fungus (from 4th to 8th day), the following chemical and biochemical parameters of fermentation broth were analyzed: pH, redox potential, quantity of free and total organic acids, carbohydrates, proteins, proteolytic activity, and total dry weight biomass. The detergent, sodium tripolyphosphate and ethoxylated oleyl-cetyl alcohol at a concentration of 0.01% were influenced on the decrease of pH value, proteolytic activity and amount of total protein. At the same time, the tested detergent was influenced on increase of redox potential and quantity of free and total organic acids. The detergent showed the strongest inhibitory effect on the bioproduction of glucose but sodium tripolyphosphate showed the strongest stimulatory effect on the bioproduction of the glucose and fructose. The total biomass of the fungus *P. verrucosum* was significantly inhibited by ethoxylated alcohol (26.95%) and detergent (20.96%), but it was stimulated by sodium tripolyphosphate (14.97%). According to results obtained in this study, fungus could be successful applied in biological treatment of detergents contaminated natural ecosystems as well as wastewater treatment plants.

Keywords: biomass, detergent, ethoxylated oleyl-cetyl alcohol, sodium tripolyphosphate, *P. verrucosum*

ISBN 978-9989-668-99-9