PHYSIOLOGICAL REACTION OF *COMAMONAS TESTOSTERONI* TO HEXACHLOROBENZENE

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The species of *Comamonas testosteroni* is widely spread in soils, activated sludge and seabed sediments. *C. testosteroni* can degrade xenobiotic compounds, such as chlorobenzenes, pentachlorophenol, using that chemical compounds as a carbon source. Hexachlorobenzene (HCB) was actively used in the 20th century as a fungicide to protect plants from phytopathogens. Also, HCB is a waste of textile, dyeing, rubber and other industries that accumulates in the soil. Due to its high persistence, it remains in the soil for years. The search for biologically active destructors of HCB is promising. The HCB effect on the cellular lipids remains almost unexplored. We isolated and identified *C. testosteroni* UCM B-400 and B-401 strains from the HCB landfill. Therefore, **the main goal of the study** was to determine the lipids peroxidative products in *C. testosteroni* UCM B-400 and B-401 strains in response to HCB toxicity, as well as the catalase and peroxidase activity.

Methods. *C. testosteroni* B-400 and B-401 strains were grown in a mineral LB medium (pure control) and with the addition of 10 mg/L and 20 mg/L of HCB. The lipid peroxidation products and the enzyme activities of antioxidant system were determined spectrophotometrically.

Results. Primary peroxidation products – diene conjugates under 20 mg/L HCB were higher up to 2 times for *C. testosteroni* UCM B-400 strain and up to 8 times for *C. testosteroni* UCM B-401 strain, compared to pure control. Malondialdehyde in B-400 strain cells decreased up to 5 times, but increased up to 2 times in B-401 strain, compared to pure control. Schiff's bases amount in B-400 strain cells was 2–3 times lower than in pure control. However, Schiff's bases amount in B-401 strain cells under higher HCB dose was at the same level as in pure control. Catalase activity was 1.5 times higher in all experimental variants, compared to the pure control (in B-401 strain cells), but in was 2 times lower in B-400 strain cells, compared to the pure control. The response of the two strains to HCB was similar only in peroxidase activity terms, which was slightly higher, compared to the pure control.

Conclusions. The reaction of both strains to the HCB presence differed in the content of diene and triene conjugates, malondialdehyde, as well as different catalase and peroxidase activity levels. Catalase activity is one of the key of adaptation processes to toxic conditions, which was more pronounced for *C. testosteroni* UCM B-401 strain. The level of physiological response of *C. testosteroni* UCM B-400 and B-401 strains confirms their tolerance to HCB, and indirectly – the ability to destroy the specified toxic compound.