Interaction between mercuric chloride and extracellular polymers of biofilm-forming mercury resistant marine bacterium *Bacillus thuringiensis* PW-05.

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The interaction mechanism of mercury with extracellular polymers (EPS) produced from a mercury resistant marine bacterium *Bacillus thuringiensis* PW-05 was studied. Extracted EPS contained 1567.8 µg/ml of carbohydrate, 163.8 µg/ml of protein and 3.68 µg/ml of DNA. The zeta potential of the mercury bound EPS increased from -9.10 mV of pristine EPS to -1.42 mV. >90% of Hg^{2+} was absorbed by the EPS from the solution after 2 h. UV-Vis, FTIR and ^{1}H NMR spectroscopy revealed the possible role of carboxyl, phosphoryl, hydroxyl, amino and sufhydryl functional groups in the interaction process. EPS architecture was found to be modified from purely amorphous to fairly crystalline after interaction with mercury as revealed by XRD. Interaction process was found to be spontaneous with negative free energy (-61.77, -63.17 and -61.74 J/mol at 298, 308 and 318 K respectively) and an enthalpy driven process. More in ***RSC Adv.*, 6: 109793-109802 (2016)** DOI: 10.1039/C6RA21069D