BIODEGRADATION OF PHENOL ADSORBED ON SOIL IN THE PRESENCE OF POLYCYCLIC AROMATIC HYDROCARBONS

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ABSTRACT

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Degradation of phenol and polycyclic aromatics hydrocarbons (PAHs) presented in artificially contaminated and/or real soil collected from a contaminated site of former coke plant by free cells of *Candida tropicalis* was studied in batch cultures and at the ratio of liquid culture media : soil = 2 : 1 with the initial concentration of phenol 560 mg kg⁻¹ and 152 mg kg⁻¹ (real soil), respectively. The results confirmed that aerobic biodegradation of phenolic compounds is a viable method for their destruction both linked on solid matrix of soil and in aqueous liquids extracted from soil. Nevertheless, in the case of mixed contamination where phenols with PAHs are presented, PAHs are mostly resistant to biodegradation. Based on that, mixed strains of *Candida tropicalis* and fungus *Phanerochaete chrysosporium* were simultaneously applied on biodegradation of both phenol and PAHs contained in aqueous slurry of contaminated soil with high efficiency. A common mixture of yeasts and white rot fungus proved to be a potent tool for effective biotreatment of contaminated site of former coke plants.

Keywords: Polycyclic artomatic hydrocarbons, Phenol, Bioremediation, *Candida tropicalis, Phanerochaete chrysosporium.*