

Biotransformation of Diphenyl Ether and its Brominated Derivatives by *Sphingomonas* sp. PH-07

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Polybrominated diphenyl ethers (PBDEs) are commonly used flame retardant chemicals in such diverse commercial products as textiles, circuit boards, and other plastic products. Through the disposal of these products to the environments without any regulations, the concentrations of highly accumulated PBDEs in soil, sediment, and biota are reported by several recent studies. The toxicity of PBDEs is being intensively investigated by researchers and some congeners showed dioxin-like activities and binding affinities to human estrogen receptors. However, the fate and degradation of PBDEs in the environment are not well understood yet. The bacterium *Sphingomonas* sp. PH-07, which utilizes DE as sole carbon and energy source, was isolated by DE enrichment from activated sludge in wastewater treatment plant. This strain was able to completely mineralize DE at a concentration of 10 mg / 10 ml in minimal salt medium (MSM) within 6 days. We detected phenol and catechol as intermediates and they were utilized for further metabolic pathway. Strain PH-07 also showed metabolic activities to 4-brominated and 2,4- and 4,4'-dibrominated DEs in the MSM and produced bromophenols as respective intermediates. In the present study, we are trying to apply strain PH-07 for degradation of tribrominated DEs aerobically and the final results will be discussed in detail. Biotransformation of brominated DEs by aerobic bacteria could play a potential role in the bioremediation on PBDEs contaminated sites