Abstract

Polycyclic aromatic hydrocarbons are anthropogenic pollutants of the environment that reprsent danger to human health. Thus, there is a great need for knowledge of their degradation mechnaims that could be utilized for bioremediation of the contaminated environment. Polycyclic aromatic hydrocarbons with higher molecular weight are rather insoluble substances with very low bioavailability and one of them *i.e.* benzo[*a*]pyrene was found to cause carcinogenic effects and other polycyclic aromatic hydrocarbons are potential carcinogens.

In this thesis, I describe information of microbial degradation pathways of suspected carcinogens such as benzo[*a*]pyrene, benz[*a*]nthracene, dibenz[*a*]anthracene, benzo[*k*] fluoroanthene, benzo[*b*]fluoroanthene, chrysene and indeno[*1,2,3-c,d*]pyrene. I also discuss enzymes of degradation pathways, namely ring-hydroxylating dioxygenases, dihydrodiol dehydrogenases, ring-cleaving dioxygenases and their adaptations to catabolism of heavy polycyclic aromatic hydrocarbons.

Key words: polycyclic aromatic hydrocarbons, *Pseudomonas*, biodegradation, benzo[*a*]pyrene