[SPII-7]

Phenotypic and Genetic Studies on the Degradation of Monocyclic Aromatic Hydrocarbon by *Rhodococcus* sp. Strain DK17

Dockyu Kim[1*], Gerben J. Zylstra[2], and Eungbin Kim[1]
[1]Department of Biology, Yonsei University,
[2]Biotechnology Center for Agriculture and the Environment, Rutgers University

Rhodococcus sp. strain DK17 was isolated from soil for the ability to grow on *o*-xylene as the sole carbon and energy source. Although DK17 cannot grow on *m*- and *p*-xylene it is capable of growth on benzene, phenol, toluene, ethylbenzene, isopropylbenzene, and other alkylbenzene isomers. One UV-generated mutant strain DK176 simultaneously lost the ability to grow on *o*-xylene, ethylbenzene, isopropylbenzene, toluene, and benzene although it can still grow on phenol. The mutant strain is also unable to oxidize indole to indigo following growth in the presence of *o*-xylene. This observation suggests the loss of an oxygenase that is involved in the initial oxidation of the (alkyl)benzenes tested. PFGE analysis demonstrated the presence of two large megaplasmids in the wild type strain DK17, one of which (pDK2) is lost in the mutant strain DK176. Since several other independently derived mutant strains unable to grow on alkylbenzenes are also missing pDK2 the genes encoding the initial steps in alkylbenzene metabolism (but not phenol metabolism) must be present on this approximately 330 kb plasmid. Also, this presentation covers the up-to-the-minute molecular genetic data mainly by highlighting functional annotations of the degradation genes on pDK2.

This work was supported by a grant (F01-2002-000-10006-0) from the Korea Science and Engineering Foundation.