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CHARACTERIZATION OF PCBs-DEGRADING BACTERIA AND CLONING OF GENES RELATED TO THEM

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Polychlorinated biphenyls(PCBs)-degrading bacterium, *Pseudomonas* sp. strain SY5, is isolated from a municipal sewage treatment plant. Strain SY5 can effectively degrade PCBs through *meta*-ring cleavage pathway and also the variety of aromatic compounds as a sole carbon source. Strain SY5 is immobilized into the pore of polyurethane foam. The immobilized strain SY5 shows higher degradability for Aroclor 1242 than non-immobilized strain SY5. After two genes that code for 2,3-dihydroxybiphenyl 1,2-dioxygenase from strain SY5 are cloned into *E. coli* DH5α, the analysis of their DNA sequences is performed. The result of the analysis indicates that the *bphC* genes of strain SY5 and the *bphC* of other Gram-negative bacteria show high homology at the amino acid level.

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REGULATION AND EXPRESSION OF *CATBCA* OPERON OF *PSEUDOMONAS PUTIDA*

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CatBC fragment was cloned on vector pUC19 and restriction map of the recombinant DNA was constructed with *Sph* I, *Bam*H I, *Kpn* I, *Apa* I, *Eco*R I, *Pst* I, *Sal* I, and *Xba* I sites. An open reading frame corresponding to *catA* encoding catechol 1,2-dioxygenase was consisted of 933 nucleotides and deduced amino sequence showed 95% identity to *catA* of *P. putida* mt-2. The *catA* gene from *P. putida* SM25 showed 48.6%, 53%, 26.8%, and 21.5% amino acid homologies to those of other *catA* genes, *pheB* of *Pseudomonas* sp. EST1001, *catA* of *Acinetobacter calcoaceticus* ADP001 and *Arthrobacter* sp. mA3, and *tcbC* encoded chlorocatechol 1,2-dioxygenase of *Pseudomonas* sp. P51. The deduced amino acid sequences of *catB* and *catC* were showed the homologies of 94% and 91% with those of *P. putida* RB1, respectively. The *catBCA* genes were tightly linked, regulated under coordinate transcription, and transcribed from a single promoter located on upstream of *catB* gene. The transcription level of *cat*BCA was increased 10 fold higher than that of pRS415a.which is promoterless vector. Regulatory gene, *catR* was located in upstream of *catBCA* in *P. putida* and transcribed from opposite orientation directing the *catBCA*.