B313 Isolation and Characterization of 2,4-Dichlorophenoxyacetic Acid-Degrading Bacteria from Paddy Soils

Min-Jae Chung*, Se-Young Shin and Jong-Ok Ka
Department of Agricultural Biology, Seoul National University, Suwon 441-744, Korea

Several dominant 2,4-dichlorophenoxyacetic acid (2,4-D) degrading bacteria were isolated from paddy soils. Most of the isolates belonged to *Burkholderia* species by FAME analysis, but they were distinct in chromosomal patterns obtained by PCR amplification of repetitive extragenic palindromic (REP) sequences. The 2,4-D degradation pattern with resting cells indicated that 2,4-D degradative enzymes were inducible by 2,4-D in all of the isolates. Plasmid DNAs were detected from all of the isolates and their 2,4-D degradation phenotype was highly transferred to other bacteria, suggesting that the 2,4-D genes were on the conjugative plasmids. When analyzed with PCR using *tfdA*-targeted primers, 50% of the isolates were shown to have the *tfdA* gene of the plasmid pJP4. 2,4-D degradation patterns in natural paddy soils varied depending on the indigenous microbial populations and addition of 2,4-D degraders much improved 2,4-D mineralization in persistent soils.

B314 Stability of 4CB-degrading GEM strains in different waters

Joung-Suk Seo* and Chi-Kyung Kim
Department of Microbiology, Chungbuk National University

As the genetically engineered microrganism(GEM) and their recombinant plasmids could be released into natural environments, their stabilities and impact to indigenous microorganisms have become a matter of scientific concern in terms of microbial ecology. *Pseudomonas* sp. DJ-12 and its GEM strains (*E. coli* CU1, *E. coli* CU103, *E. coli* CUD38) which are capable of degrading 4CB were studied for their stability in sterile distilled water (SDW), filtered autoclaved water (FAW), filtered river water (FW) by incubation for 30 days at 20℃ and 30℃. The GEM strains were survived more stably in the order of SDW > FAW > FW. The plasmid DNAs of the GEM strains were quite stable in SDW and FAW than FW. Their 4CB-degrading activities were maintained for 30 days without decrease in any water environments. Therefore, stability of the GEM strains was found to be more affected by physicochemical and biological factors of water than gene organization of the GEM strains.