

B314 Degradation of trichloroethylene by *Pseudomonas* sp. EL-04J

Ho Sung Kim*, Geun Tae Park, Geon Lee, and Sang Joon Lee
Department of Microbiology, Pusan National University

Pseudomonas sp. EL-04J was previously isolated from phenol-acclimated activated sludge. In a preliminary experiment, the optimum growth temperature and pH were 30°C and pH 7.2±0.02 in 250ml Erlenmeyer flask that contained 50ml of mineral salts medium (MSM) supplemented with 5mM phenol. Phenol-grown *Pseudomonas* sp. EL-04J cells can degrade trichloroethylene (TCE). Following a transient lag period, *Pseudomonas* sp. EL-04J cells degraded TCE at concentrations of at least 250 µM with no apparent retardation in rate, but the transformation capacity of such cells was limited and depended on the cell concentration. The degradation rate of TCE followed the Michaelis-Menten kinetic model. the maximum degradation rate (V_{max}) and saturation constant (K_m) were 7nmol/min · mg of cell protein and 11 µM. Cometabolism of TCE by phenol fed enrichments was evaluated in 50ml serum vial that contained 10ml of MSM supplemented with 10mM TCE. TCE degradation was inhibited in the initial period of 1mM phenol addition, but after that time *Pseudomonas* sp. EL-04J cells degraded TCE and showed cell growth (at 660nm).

B315 Fungal Degradation of Biopol™, Sky-Green™ and Mater-Bi™ in soils

Ae Ri Lee* and Mal Nam Kim
Department of biology, Sangmyung University

Biodegradation behavior of Biopol™ (PHB), Sky-Green™ (SG) and Mater-Bi™(MB) which are the most commercially reliable of all the biodegradable plastics, was investigated when buried in forest soil, sandy soil, activated sludge soil and farm soil. Microbial characteristics of fungi degrading plastics were also explored. Seven PHB degrading fungi, five SG degrading fungi, and six MB degrading fungi were isolated. Weight loss of SG and MB took place at 28°C more than at 37°C, while PHB was degraded faster at 37°C than at 28°C. Biodegradation of all the three polymers was most active in the fungi isolated from activated sludge soil. In the modified Sturm test *Penicillium simplicissimum* LAR13 and *Paecilomyces farinosus* LAR10 degraded PHB relatively well, while the degradation rate by *Aspergillus fumigatus* LAR9 was lower than expected. *P. simplicissimum* LAR13 showed the highest degradation rate for SG and *A. fumigatus* LAR9 was most effective in MB degradation. Biodegradability of isolated fungi was affected by the incubation temperature. In both the soil burial test and the modified Sturm test the order of the biodegradation rate was PHB > SG > MB.