SII-3-5

Bench-scale Bioremediation of Pentachlorophenol-contaminated Soil

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Twelve active isolates were finally selected for the further studies on the biodegradability and for the use in the slurry-phase and land-farming treatment of pentachlorophenol (PCP)-contaminated soil. Especially, *Pseudomonas* sp. Bu34 was able to degrade a much higher concentration of PCP than any previously reported PCP-degrading bacteria or fungi. The soil brought from a PCP-contaminated site contained 50 - 100 mg/kg wet soil of PCP and was treated with the active bacterial isolates in a bench-scale slurry reactor. PCP in the contaminated soil was decreased up to 90% at 8 days after incubation of the isolates and completely disappeared within 16 days. In land-farming treatment, 1,000 mg/kg soil PCP in indigenous microorganisms (Control), indigenous and added bacterial treatment, and indigenous and added bacterial treatment with air supply were degraded to 59, 84, and 92% at 54 days after incubation, respectively. Therefore, it was demonstrated that PCP removal rate in slurry-phase treatment was higher than that in land-farming treatment. Air supply and microbial addition to the treatment system appeared to be much effective in enhancing biodegradation of PCP in soil.

SII-4-1

Crystal Structure of Hepatitis C Virus RNA Helicase; Mechanism of Unwinding Duplex RNA

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Hepatitis C Virus (HCV) is the major etiologic agent of non-A non-B hepatitis. Its genome encodes RNA helicase domain composed of about 450 amino acids which unwinds RNA/RNA, DNA/DNA, and RNA/DNA heteroduplexes. We have determined crystal structure of HCV RNA helicase domain at 2.3 Å resolution by multiple isomorphous replacement method. One of the crystal packing interface between a pair of symmetry related molecules is a channel lining with strictly conserved arginine residues. The channel is close to the NTP binding site, and has a size adquate to accomodate only single stranded RNA. Based on the structure and the unusual crystal packing, a molecular mechanism of unwinding duplex RNA by a putative functional dimer of HCV RNA helicase will be presented. [This study made use of X-ray facility at Pohang Ligh Source]