E339 Characterization of Poly(3-hydroxyalkanoates)-Degrading *Streptomyces* sp. CD-23 Isolated from Compost

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A bacterial strain CD-23 capable of degrading medium-chain-length poly(3-hydroxyalkanoates), mcl-PHAs, was newly isolated from chicken manure compost. The isolate was identified as a gram positive bacterium belonging to *Streptomyces* with rectiflexible spore chain as determined by morphological and physiological characteristics and 16S rDNA sequence analysis. This organism was able to degrade mcl-PHAs produced by *Pseudomonas putida* and *P. oleovorans* from alkanoic acids of hexanoic acid to undecanoic acid. Particularly, PHAs bearing repeating units derived from unsaturated alkanoic acid such as 10-undecenoic acid or 10-undecynoic acid and that of produced from hexanoic acid were more efficiently degraded than other polymers. This microorganism could also hydrolyze poly(3-hydroxybutyrate), PHB. Extracellular mcl-PHA depolymerase activity was not detected in the supernatant obtained from liquid culture containing PHB as the sole carbon substrate. Similarly, PHB depolymerase was not secreted when *Streptomyces* sp. CD-23 was grown with only mcl-PHAs.

E340 Biosynthesis of Polyhydroxyalkanoates and 5-Aminolevulinic Acid by *Rhodopseudomonas* sp. KCTC 1437

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Rhodopseudomonas sp. KCTC 1437 was grown under different conditions in order to investigate the metabolic relationships between polyhydroxyalkanoates (PHAs) and 5-aminolevulinic acid (ALA) biosynthesis in purple non-sulfur bacteria. This organism could use acetic acid and propionic acid, which were produced by anaerobic digestion of waste water, as carbon sources. Acetic acid was the best substrate for the production of PHA among the carbon sources used in this study. Furthermore, when succinic acid was added as a co-substrate PHA content was over 70 % of dry cell weight. A mixture of acetic acid and propionic acid was the better substrate for ALA production than DL-malic acid or acetic acid. PHA and ALA were synthesized simultaneously by controlling substrate concentrations and pH of culture medium. The biosynthesis of PHA and ALA was exclusive each other and the increase of ALA production resulted in the decrease of PHA accumulation in the cell.