

**E307****Studies on Terpene Compounds Distributed in *Chlorella ellipsoidea*****So-Yeon Lee<sup>\*</sup>, Kwang-Seok Seo<sup>1</sup> and Chong-Sam Lee**Dept. of Biology, College of Natural Science, Sungshin Women's University; Dept. of Environmental Engineering, Kachun-gil College<sup>1</sup>

Isoprenoid known with secondary metabolites have various anti-cancer effect, ecosystem of allelochemicals effect, heart-blood system of diseases or cataract, physiological function. Isoprenoid in order in *C. ellipsoidea* by GC-MS analysis followed: monoterpene family, sesquiterpene derivative, diterpene family, diterpene derivative, triterpene family, higher terpenoid family.

**E308****Biosynthesis of Novel Copolyesters Consisting of 3-hydroxyvalerate and Medium-chain-length 3-hydroxyalkanoates by *Pseudomonas* sp. DSY-82 through Cometabolism****Hye-Ok Kang<sup>\*</sup>, Chung-Wook Chung and Young-Ha Rhee**

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The newly isolated strain, which was identified as *Pseudomonas* sp. DSY-82, synthesized medium-chain-length polyhydroxyalkanoate (MCL-PHA) copolymers when grown on alkanolic acids from hexanoic acid to undecanoic acid as the sole carbon source. Butyric acid and valeric acid supported the growth of the isolate but not PHA production when used solely. However, unusual polyesters containing

3-hydroxyvalerate as well as MCL 3-hydroxyalkanoate monomer units were synthesized when valeric acid was co-fed with a good polymer-producing alkanolic acids, such as either octanoic acid or nonanoic acid, indicating the formation of monomeric units from both substrates. Differential scanning calorimetry (DSC) analysis revealed that the corresponding polyesters formed were random copolyesters with various monomeric units. This is the first example of microbial synthesis of a random copolyester consisting of 3-hydroxyvalerate and MCL 3-hydroxyalkanoate monomer units through cometabolism.

**E309****Purification and Characterization of a Novel Extracellular Medium-Chain-Length Poly (3-hydroxyalkanoate) Depolymerase from *Streptomyces* sp. KJ-72****Hwa-Jung Kim<sup>\*</sup>, Do-Young Kim, Jin-Sik Nam and Young-Ha Rhee**

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A novel extracellular medium-chain-length poly (3-hydroxyalkanoate), PHA<sub>MCL</sub> depolymerase from *Streptomyces* sp. KJ-72 was purified to electrophoretic homogeneity by a hydrophobic interaction column chromatography using Octyl-Sepharose CL-4B and a gel permeation chromatography using Sephadex G-150. The enzyme was composed of a single polypeptide chain with a molecular weight of 29,000 Da as determined by SDS-PAGE. The apparent molecular weight of the native enzyme was estimated to be 27,164 Da by MALDI-TOF mass. The pI value of the PHA<sub>MCL</sub> depolymerase was 4.7 and this enzyme was found to be a non-glycosylated protein. The maximal activity was observed

at pH 8.7 and 50 °C. The PHA<sub>MCL</sub> depolymerase was capable of hydrolyzing polycaprolactone as well as various PHA<sub>MCL</sub> and *para*-nitrophenyl esters of fatty acids. However, poly (L-lactic acid) and substrates for lipase such as *para*-nitrophenylpalmitate and triolein were not hydrolyzed by this enzyme. The enzyme was insensitive to phenylmethylsulfonyl fluoride and dithiothreitol, indicating that serine residue and disulfide bonds do not play an important role in the active site of the enzyme. On the other hand, this enzyme was completely inactivated by 5 mM *N*-bromosuccinimide that is a specific reagent for tryptophan residue. These results suggest that the PHA<sub>MCL</sub> depolymerase from *Streptomyces* sp. KJ-72 is a novel enzyme which is significantly different from PHA depolymerases of other bacteria in many properties.

## E310

**Purification and Structural Elucidation of a New Laminin Adhesion Inhibitor, Cytometryrin from a Fungal strain F-70912**

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Tumor cell interaction with extracellular matrix (ECM) is defined as the critical event of tumor invasion that signals the initiation of the metastatic cascade. Laminin, one of major adhesive proteins of basement membrane (BM), is known to play a key role in cell adhesion, spreading, and movement. In the course of screening fungal metabolites

for the inhibitors of cell adhesion to laminin in a whole cell assay, strong inhibitory activity was detected in fermentation extract of a fungal strain F-70912. The active compound was isolated from culture broth by bioassay-guided isolation procedures composed of ethylacetate extraction, and chromatographies on silica gel, Sephadex LH-20, and YMC-ODS-A. The purified compound was found to be a new type of cytochalasin, which is cytochalasin E derivative with one additional methoxyl group linked to its phenylalanine moiety and designated cytometryrin. Cytometryrin inhibited the adhesion of B16 melanoma cells to laminin with an IC<sub>50</sub> value of 4 mg/ml.

## E311

**진균에 대한 Methyl 2-Benzimidazole Carbamate의 항균 효과**

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항진균제로 사용되는 methyl 2-benzimidazole carbamate (carbendazim, CBZ)를 대상으로 하여 동물독성조사를 실시한 결과 0.001% 이상의 농도에서 세포 성장이 크게 억제되었다. Broth microdilution test를 실시하여 fungi 16주에 대한 CBZ의 MIC를 측정하였다. 대부분의 균주에 대한 MIC가 1.95 x 10<sup>-4</sup> µg/ml로 측정되었으며 *Penicillium pinophilum*, *Aspergillus niger*, *Aspergillus funigatus*, *Paecilomyces farinosus*에 대한 agar disk diffusion test 결과 0.1% CBZ 농도에서 30~60 mm의 억제대가 형성되었다. 그러나 CBZ에 대해 내성이 유도된 내성주 *P. farinosus*는 1% CBZ에서도 내성이 형성되지 않았으며 비내성주보다 MIC 값이 증가되었다 (내성주의 MIC; 5.12 x 10<sup>3</sup> µg/ml). *Aspergillus niger*의 포자와 균사시기에 CBZ의 항균활성 test를 실시하였을 때 CBZ가 발아관의 형성을 억제하는 것으로 나타났다.

## E312