treated with 10 μg/ml of PCB 52 for 24 h, the cells had a two-fold greater rate of change in catalase activity when compared to contol group.

E109

Purification and Characterization of Lysozyme from Hemolymph of Sweet Potato Hornworm, *Agrius convolvuli* Larvae

Jong-Wan Kim* and Sung Moon Yoe
Dept. of Biology, Dankook University, Cheonan 330-714

Lysozyme plays a central role in initiating and maintaining the antibacterial defense response of insect. A new family member of insect lysozyme, an antibacterial peptide, has been isolated from fifth instar *Agrius convolvuli* larvae. Larvae was vaccinated with *E. coli* K12 D21 (4×10^6 cells of log phase) into abdomen. After 24 hours, immunized hemolymph was collected and stored at -7 0° C. *Agrius* lysozyme was isolated by an cation-exchange chromatography and reversed-phase fast performance liquid chromatography, and sequenced by HPLC system. The purified *Agrius* lysozyme was heat-stable and had a molecular weight of about 15 KD by SDS-PAGE. *Agrius* lysozyme had specific antibacterial activity against Gram-positive bacteria (*Micrococcus luteus*) but no activity against Gram-negative bacteria (*E. coli*). N-terminal sequence of *Agrius* lysozyme was similar with lysozyme from *Heliothis virescence* larvae (about 70% homology in first 17 sequence). Western blot patterns of *Agrius* lysozyme with anti body from *Artogeia rapae* lysozyme showed that *Agrius* lysozyme was similar with *Artogeia* lysozyme.

E110

Cloning and Expression of *Galleria mellonella* Ferritin That Encodes Two Major Subunits

Beom Su Kim*[1], Chi Young Yun[2] and Hak R. Kim[1]
Dept. of Biology, Korea University, Seoul 136-701[1]; Dept. of Biology, Taejon University, Taejeon 300-120[2]

Ferritin 26kDa and 32kDa subunit cDNAs were obtained from RT-PCR using primer designed from N-terminal sequence analysis and degenerate primers. RACE was used to obtain the complete protein coding sequence. The 26 kDa subunit encodes a 211 amino acid polypeptide including a 20 amino acid leader peptide whereas the 32 kDa subunit encodes a 232 amino acid polypeptide containing a 19 leader peptide. An IRE (iron-responsive element) sequence with a predicted stem-loop structure were present in the 5'-untranslated region of the wax moth ferritin mRNA 26 kDa and 32 kDa, respectively. The 26 kDa sequence alignment has a 74% homology with *Calpodes ethlius* (S), 50% with *Drosophila melanogaster* and 39% with *Aedes aegypti*. The seven residues were associated with the metal-binding site in mature polypeptide. Northern blot analysis indicated that there was 1.5 and 1.75 fold increases in the expression of ferritin mRNA 26kDa after iron-fed fat body and midgut, respectively. Also, we confirmed that the ferritin mRNA is not expressed in adult ovary and testis. The 32 kDa sequence alignment has a 78% homology with *Manduca sexta*, 69% with *C. ethlius* (G). The *G. mellonella* ferritin subunits showed little resemblance to each other (19%). The glycoslation site (Asn-X-Ser/Thr) was found in 32 kDa subunit but not in 26 kDa.

E111

Effect of Some Natural Products from Herbs on Cell Proliferation in Cultured Mammalian Cells

Na-Young Kim*, Jae-Hoon Jeong, Chae-Young Lim and Jung-Sup Lee
Division of Biological Sciences, Research Center for Proteineous Materials, Chosun University, Kwang-ju 501-759

This study was performed to examine the effects of natural products produced from herbs on the cell proliferation in cultured mammalian cells. The cell proliferation were assayed using CellTiter non-radioactive cell proliferation assay kits (Promega) in mouse (NIH3T3) and two human cancer cell lines (HeLa and SW480). The natural products were extracted from 12 kinds of korean herbs with methanol (M), methylene chloride (D), ethylacetate (E), buthanol (B), and water (W). Among the fractions, the methylene chloride ones from *Carthamus tinctorius* L., *Rehmannia glutinosa*, and *Angelica gigas* Nakai inhibited the cell proliferation to 56.2%, 71.5%, and 57.4%, respectively, at 80 ㎍/㎖ for 72 hr in HeLa cells. In addition, the same fractions inhibited the cell proliferation of mouse NIH3T3 cells to an average of 87.8% at 20 ㎍/㎖ for 72 hr. Six kinds of fractions from *Rheum coreanum* Nakai (B), *Caesalpinia sappan* L. (B), *Cyperus rotundus* L. (E), *R. glutinosa* (E), *A. gigas* Nakai (E), and *Paeonia moutan* Sims (E) exhibited the cytotoxicity to an average of 29.3% at 80 ㎍/㎖ for 72 hr in NIH3T3 cells. However, theses fractions did not show the cytotoxicity against the two human cancer cell lines, HeLa and SW480. Interestingly, all fractions from *Achyranthes japonica* Nakai and *C. rotundus* L. even more increased the cell proliferation to 126.7% and 110.9% in the two human cancer cell lines, respectively, compared to that of untreated control. These results suggest that natural products from herbs can exert their cytotoxic effects or even accelerate the cell proliferation on normal and cancer cell lines.

E112

Molecular Cloning of the New Type 3b-Hydrosysteroid Dehydrogenase (3b-HSD) in Hunan Fetal Heart

김 수주*[1], 오선희[2], 김원신[2], 이희섭[1]
원광대학교 의과대학 산부인과[1], 원광대학교 자연대학 생명과학부[2]

3β-HSD는 steroid hormone 생성에 중요한 단계에 작용하는 효소로서 human에서는 3β-HSD를 encoding하는 2개의 상동성이 매우 높은 유전자 Type I과 Type II가 존재한다. Type I은 주로 태반과 말초조직에서 발현되며, Type II는 주로 부신과 성선에서 발현된다. Rat에서는 4가지의 type이 존재하며, rat heart에서 aldosterone과 corticosterone이 생성된다고 알려져 있다. 따라서 본 연구에서는 human fetal heart 에서도 3b-HSD가 발현되고 있는지를 조사하였다. Western blot analysis에서 human fetal heart에 3β-HSD가 존재를 확인하였고, RT-PCR을 이용해 그 효소를 cloning하고 분석하였다. Human fetal heart에서 cloning된 3b-HSD는 human type I 과 II에 각각 91 %와 90 %의 상동성을 보였다. 따라서, human fetal heart에서 새로운 type의 3b-HSD가 발현되고 heart에서 steroid hormone 생성에 중요한 역할을 것으로 보인다.

E113

P-type Calcium Current in a Crustacean Motoneuron Undergoes Seasonal Fluctuation

Sungwon Hong*
Department of Physiology, School of Medicine, Dongguk University, Kyungju 780-714

It has been shown that P-type Ca^{2+} channels in the crayfish abdominal motoneuron F3 undergoes activity-dependent inactivation *in vitro*. In order to determine whether the inactivation of P-type Ca^{2+} channel occurs naturally, seasonal changes in ω-agatoxin IVA-sensitive P-type Ca^{2+} channels were determined by measuring the current amplitudes through