

Agricultural Environment & Ecology, National Institute of Agricultural Science and Technology, Suwon, Korea

We classified the Hox genes of the oligochaeta, *Perionyx excavatus* using a PCR survey and phylogenetic analysis was performed. We were able to identify 10 different Hox-type homeobox fragments and 2 Non-homeobox fragments, Xlox and Phr class. Phylogenetic analysis reveals that the oligochaeta, *Perionyx excavatus* has at least three anterior (PG1-3), six medial (PG4-8), and one posterior (PG9-10) group genes. Especially, Pehox06 was thought to be a type of paralogous groups 2 gene. It is considered that this result provides the first evidence for the presence of *proboscipedia* (pb) class gene in the oligochaeta.

**E138** Effects of Natural Products Fractionated from 18 Kinds of Korean Herbs on Cell Proliferation, Colony Forming Ability and DNA Topoisomerase I in Cultured Mammalian Cells

In Sook Kim<sup>1</sup>, Yeon Hee Kim, Eun-Rhan Woo<sup>1</sup>, Chae Young Lim, Si Wouk Kim<sup>2</sup> and Jung Sup Lee

Division of Biological Sciences and Research Center for Proteineous Materials, Chosun University, Gwangju 501-759, Republic of Korea; <sup>1</sup>College of Pharmacy and Research Center for Proteineous Materials, Chosun University, Gwangju 501-759, Republic of Korea; <sup>2</sup>Division of Environmental Engineering and Research Center for Proteineous Materials, Chosun University, Gwangju 501-759, Republic of Korea

The present study was performed to examine the effects of natural products fractionated from 18 kinds of Korean herbs on cell proliferation, colony forming ability and DNA topoisomerase I in cultured mouse NIH3T3 cells and two human cancer cell lines, HeLa and SW480. The natural products were fractionated with methanol (M), methylene chloride (D), ethylacetate (E), butanol (B) and water (W) in order. The *Rheum coreanum* Nakai M, *Caesalpinia*

*sappan* L. E and B, *Leonorus japonicus* Houtt M, *Salvia miltiorrhiza* D, *Commiphora molmol* Engl M and D, *Hedyotis diffusa* Willa H fractions showed a significant cytotoxic activity to the cultured mammalian cells. Among the fractions tested, the *Caesalpinia sappan* L. E and B, *Rheum coreanum* Nakai M, *Salvia miltiorrhiza* Bunge D dramatically inhibited the cell proliferation to 8.21%, 2.94%, 25.5% and 1.02%, respectively at a final concentration of 80 µg/ml for 48 hr. In this study, the effects of the fractions on the colony forming ability and topoisomerase I activity were also examined. The *Rheum coreanum* Nakai M, *Caesalpinia sappan* L. E and B fractions clearly inhibited the relaxation activity of DNA topoisomerase I and the ability of colony formation of human cancer cell lines as well.

**E139** Neurotoxin-induced Cell Deaths in Nurr1-overexpressing Human Neural Stem Cells

H.-S. Lee<sup>1</sup>, K.S. Yoo<sup>1</sup>, S. Sohn<sup>2</sup>, S.H. Lee<sup>3</sup>, S.U. Kim<sup>1,4</sup> and M.A. Lee<sup>1</sup>

Brain Disease Research Center<sup>1</sup>, Institute for Medical Sciences<sup>2</sup>, Ajou University School of Medicine, Suwon 442-749; Department of Biology, Sangmyung University, Seoul 110-743, Korea<sup>3</sup>; Division of Neurology, University of British Columbia, Vancouver, Canada<sup>4</sup>

A loss of midbrain dopaminergic (DA) neuron is a pathological hallmark of Parkinson disease (PD), but the cause and mechanism underlying this loss in PD are poorly understood. Nurr1 is highly expressed in midbrain DA neurons, the major cell type lost in human PD, and its null mice have selective agenesis of DA neurons in substantia nigra and ventral tegment area. Thus, it is possible that Nurr1 gene may be one of the potential susceptibility factors for PD pathogenesis. To correlate the expression of midbrain-specific Nurr1 gene and cell death of DA neuron induced selectively by neurotoxins, we generated

Nurr1-overexpressing human neural stem cells (Nu-NSCs). Immortalized human NSCs were generated from embryonic human brain cells via a retroviral vector encoding v-myc. Neurotoxins, 6-OHDA and MPP<sup>+</sup>, induced an extensive cell death in NSCs and Nu-NSCs, but resulting cytotoxicity are different. Nurr1 expression increased the vulnerability of NSC-Nurr1 to 6-OHDA-induced cell death. In contrast to 6-OHDA, Nu-NSC were more resistant to MPP<sup>+</sup>-induced cell deaths than parental cells. Annexin-V staining, mitochondrial membrane potential and electron microscopy indicated that 6-OHDA but not MPP<sup>+</sup>-mediated cell death was apoptotic. These results suggest that neuronal cell deaths in response to 6-OHDA and MPP<sup>+</sup> progress through different mechanisms, which can be differentially regulated by Nurr1 protein. (Supported by grants from KOSEF/BDRC)

#### **E140** Analysis of Biochemical Alteration in Glial Cells by Iron

Jinsun Kim and Eunsook Song<sup>\*</sup>  
Department of Biological Science, Sookmyung Women's University

As an essential nutrient and a potential toxin, iron poses an exquisite regulatory problem in biology and medicine. An important cellular site of both the generation of oxygen radical and oxidative damage is the mitochondria. The generation of oxygen radical by iron causes mitochondrial damage. Alteration of the MPT triggered by calcium has increasingly been implicated in ischemic and apoptotic cell death, especially in brain cells. So we examined the physiological change of glial cell mitochondria using rhodamine 123 and several biochemical parameters such as free radical production, protein oxidation, lipid peroxidation, NO production, iron and calcium content after iron treatment to glial cells. First we examined the calcium content using Arsenazo III in control and iron-treated cells because calcium

accumulation make mitochondria expand. In addition, the membrane potential measured using rhodamine 123 was decreased in iron-treated cells. From these results, we suggest that iron overload alter calcium regulation in cells and it can affect the mitochondrial function. Other biochemical parameter were increased in iron-treated cells than control.

#### **E141** Effect of Okcheonsan Powder on Concentrations of Glucose, Lipid and Protein in Streptozotocin-Induced Diabetic Female Rats

Jin-Bog Koh  
Department of Life Science, Silla University

The effects of Okcheonsan powder on the body weight, the organ weight, and the concentrations of glucose, lipid and protein were studied in the diabetic rats. Female rats (Sprague-Dawley, mean weight 313.618.5 g) were randomly assigned to one normal and two diabetic groups. They were fed experimental diets for 5 weeks. The diabetic groups were divided into the diabetic control (D-control) and 3% Okcheonsan groups. Rats were injected with streptozotocin intraperitoneally (i.p.) to induce diabetes. The Okcheonsan powder feeding could decrease the pancreatic weight, the concentrations of the triglyceride, the total cholesterol and LDL-cholesterol of serum, and the cholesterol of liver in the diabetic rats. But the concentrations of the glucose, the hepatic triglyceride and the atherogenic index seems to be not affected by it.

#### **E142** 8-CI-cAMP Increases CD98 Heavy Chain Expression via Protein Kinase C Pathway.

Young-Ho Ahn<sup>1</sup>, Jae Hwa Lee<sup>2</sup>, Se Nyun Kim<sup>1</sup>, Sang Dai Park<sup>1</sup> and Seung Hwan Hong<sup>1,2</sup>

<sup>1</sup>School of Biological Sciences, Seoul National University; <sup>2</sup>Institute of Molecular Biology and