the effect of LPA on stemness maintenance of human periodontal ligament stem cells.

Materials and Methods: Cells were isolated from human deciduous third molar teeth by previous implemented methods. To verify PDLSCs, we performed several procedure such as morphological observation, mRNA expression analysis by RT-PCR, immunofluorescence analysis, and mesenchymal differentiation *in-vitro*.

Results: From PDLSCs isolation, several spindle shaped and fibroblast-like periodontal ligament stem-like cell lines were established. Among them, the most morphologically appropriate cell line was characterized. Gene expression of OCT4, NANOG (the feature of stem cell), and CD90 (mesenchymal stem cell positive marker) were high. However expression of CD73 (negative marker of mesenchymal stem cell) was not shown. Also, STRO-1, CD146 (mesenchymal stem cell marker) and SOX2 was observed from immunofluorescence analysis as a protein level. In addition, lipid droplet was stained by Oil-red O stain after 21-day-adipogenesis in adipogenic induction medium and mineralized nodules were stained by Alizarin red S after14-day-osteogenesis in osteogenic induction medium. Also, Alkaline Phosphate staining showed osteogenesis.

Conclusions: To know about the effect of LPA on PDLSCs, further studies are necessary. But human periodontal ligament stem cell line was established. This will provide the means because stem cell was extracted from the tissue of dental patient, which has been disposed until now.

Acknowlegement: This work was supported, in part, by a grant from the "Cooperative Research Program for Agriculture Science & Technology Development (Project No. PJ011288,PJ011077)" Rural Development Administration, the "Ministry of Trade, Industry & Energy (MOTIE), Korea Institute for Advancement of Technology(KIAT) through the Leading Industry Development for Economic Region (ProjectNo. R0004357)" and "Korea Institute of Planning and Evaluation for Technology in Food, Agriculture, Forestry and Fisheries (IPET) through Advanced Production Technology Development Program, funded by Ministry of Agriculture, Food and Rural Affairs (MAFRA) (Grant number: 115103-02)",Republic of Korea.

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Anti-Fatigue Activity ofExtracts of *Acanthopanax koreanum* and *Aralia elata*

Chan Woo Sim[1], Da Rae Kim[1], Hyun Jong Ha[1], Hoon Park[1], Bong Hyun Ko[1], Young Jae Lee[*1]

[1]College of veterinary medicine, Jeju national university, 66Jejudaehakno, Jeju 690-756 , korea.

Introduction: *Acanthopanax koreanum* and *Aralia elata* is a well-known herbal medicine, *Acanthopanx koreanum* has various diterpenoids such as Acanthonic acid and etc. andthese had been considered as a drug for inflammation and diabetes mellitus,hepato-protective effect. *Aralia elata*is well-known medicinal plant which has been considered as a drug foranti-arthritic and anti-diabetic agent. However anti-fatigue effects ofcomponent of *Acanthopanax koreanum* and*Aralia elata* have not been reported. Thus in this study, their anti-fatigue effects wereinvestigated in ICR mouse.

Materials and Methods: *Acanthopanax koreanum*(EEAK) and *Aralia elata*(AE) were extracted with ethanol. The mice wererandomly divided into five groups (two EEAK groups and one AE group, one sportsdrink group and the control group). EEAK and AE, sports drink were administeredeach group for four weeks. Treadmill test was performed once a week, and forcedswimming test was performed everytwo weeks. Afterfour weeks, the biochemical parameters on blood and skeletal muscle related to anti-fatiguewere examine

Results: The high dose EEAK groupshowed a significant increase in swimming time to exhaustion as compared to thecontrol group. And both low dose and high dose of EEAK groups showed asignificant increase in treadmill running time to exhaustion as compared to thecontrol group. AE group showed an increase both swimming time and treadmillrunning time to exhaustion; however these results didn't show significant differenceas compared to the control group. The blood lactate concentration in both low doseand high dose of EEAK groups was significantly lower than control group.

Conclusions: Theseresults suggest that the *Acanthopanax koreanum*has anti-fatigue effects activity and could elevate the exercise tolerance

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Co-exposure of Bisphenol-A and Caffeine Aggravates Teratogenicity in Cultured Mouse Fetus

Lee Wha Gwon[1], Seul Gi Park[1], Chunmei Lin[2], Jung-Min Yon[1], Beom jun Lee1, Young Won Yun1, Sang-Yoon Nam*1

[1]College of Veterinary Medicine and Research Institute of Veterinary Medicine, Chungbuk National University, Cheongju 28644, Korea, [2]College of Chinese Medicine Materials, Jilin Agricultural University, Changchun, Jilin 130-118, China

Introduction: Caffeine and bisphenol-A are widely contacted in daily life. Caffeine is commonly included in coffee, tea and soft drinks that has been found in amniotic fluid, umbilical cord and higher concentration in fetus due to delay clearance. Bisphenol-A known as endocrine disruptor and has been proven having estrogenic activity, is used for not only containers which contain food and beverage, but also uncountable industrial products. That also has been accumulated in the placenta and detected in urine, amniotic fluid, and breast milk. In this study, we examined whether caffeine affects bisphenol A induced-embryotoxicity using a whole embryo culture system.

Materials and Methods: Caffeine and/or bisphenol-A were