experimental conditions such as high glucose condition, hypoxia and ROS of tumor microenvironment in HMM cells. This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIP) (Grant #:NRF-2013R1A2A2A01068237).

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**P-194**

## Isorhamnetin and Hyperoside Derived from Water Dropwort Differently Regulate the Inflammasome Activation

**Eunsaem Jeon, Geun-Shik Lee***

College of Veterinary Medicine and Institute of Veterinary Science, Kangwon National University, Chuncheon 200-701, Republic of Korea.

**Introduction:** Water dropwort (*Oenanthe javanica*), anumbelliferous plant, has been reported as a hypolipidemic, anti-platelet, anti-tumor, and immune-stimulating agent suggested to treat cardiovascular disease and cancer. However, effects of extract of water dropwort (EWD) and its pharmacological molecules, hyperoside and isorhamnetin, on the inflammatory response and inflammasome activation have not been well studied.

**Materials and Methods:** For bone marrow-derived macrophages (BMDMs), bone marrow cells were obtained by flushing tibia and femur bones from C57BL/6mice and cultured in DMEM supplemented with 10% FBS in the presence of L929 cell-conditioned medium containing granulocyte/macrophage colony-stimulating factor [1]. THP-1 cells were differentiated into macrophage-like cells using PMA. BMDMs or PMA-differentiated THP-1 cells were plated primed with LPS for 3 h [2]. After LPS priming, cells were replaced by RPMI 1640 containing the inflammasome activators in the present of EWD, isorhamnetin and hyperoside.

**Results:** In the current study, we tested the anti-inflammasome properties of EWD, isorhamnetin, and hyperoside using human and mouse macrophages. EWD and hyperoside attenuated interleukin (IL)-1β secretion and Asc pyroptosome formation resulting from activation of NLRP3, NLRC4, and AIM2 inflammasomes. Isorhamnetin did not alter inflammasome activation, although it down-regulated expression of pro-inflammatory cytokines. In addition, EWD and hyperoside presented caspase-1 inhibitory properties

**Conclusions:** Thus, hyperoside, a key molecule of water dropwort, is proposed asa candidate to attenuate pan-inflammasome activation.

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**P-195**

## γ-Poly-Glutamic Acid induced thepriming step of inflammasome while it attenuated the activation step

**Huijeong Ahn, Geun-Shik Lee***

College of Veterinary Medicine and Institute of Veterinary Science, Kangwon National University Chuncheon, Gangwon, Republic of Korea.

**Introduction:** Poly-gamma-glutamic acid (γ-PGA) is a natural, edible, andnon-toxic polymer synthesized by *Bacillussubtilis* and is suggested as a safe biomaterial for use in hydrogels and vaccine adjuvants. However, the effect of γ-PGA on inflammasome activation has not yet been studied in macrophages. Inflammasomes, which are intracellular multi-protein complexes, promote acute and chronic inflammation via interukin-1β maturation, and they are known targets for metabolic syndromes and cancer.

**Materials and Methods:** For bone marrow-derived macrophages (BMDMs), bone marrow cells were obtained by flushing tibia and femur bones from C57BL/6mice and cultured in DMEM supplemented with 10% FBS in the presence of L929 cell-conditioned medium containing granulocyte/macrophage colony-stimulating factor. THP-1 cells were differentiated into macrophage-like cells using PMA. BMDMs or PMA-differentiated THP-1 cells were plated primed with LPS for 3 h. After LPS priming, cells were replaced by RPMI 1640 containing the inflammasome activators in the present of γ-PGA.

**Results:** In this study, we observed that γ-PGA attenuated NLRP3, NLRC4, and AIM2 inflammasome activation, whereas it up-regulated expression of pro-inflammatory cytokines in human and murine macrophages. Although γ-PGA had conflicting effects on cytokine production and maturation, it clearly alleviated severity of LPS-induced endotoxin shock in an animal model.

**Conclusions:** Thus, we suggest γ-PGA as a candidate to control inflammasome-mediated disorders.

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P-196

## Fluoxetine-Induced Magnesium Efflux and Cardiac Depression in Isolated Perfused Heart of Rat

**Mun-Young Lee***

Department of Occupational Therapy, College of Health Science, Honam University

**Introduction:** Fluoxetine was chosen as a prototypic serotonin selective reuptake inhibitor without anticholinergic effects, while pemoline is a stimulant that appears to act as an indirect dopamine agonist. Although fluoxetine has been used in the field of anesthetic medicine, the cardiovascular effects of fluoxetine is still controversial. This study investigated the relation of magnesium for fluoxetine-induced cardiac depression in rat.

**Materials and Methods:** The left ventricular development pressure accompanied with the total magnesium efflux were measured simultaneously in perfused hearts. The isolated heart was retrograde-perfused with an oxygenated modified Krebs–Henseleit buffer. Values of total magnesium are measured using atomic absorption spectrophotometer.

**Results:** Fluoxetine produced reversible decreases in the left ventricular development pressure by increases in the total magnesium efflux. Fluoxetine was completely blocked decrease of left ventricular development pressure and total magnesium efflux by the pretreatment of imipramine.

**Conclusions:** These results suggest that fluoxetine-induced cardiac depression can be partly responsible to the increase in total magnesium efflux, but this reactions are inhibited sodium ion channel blockers.

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P-197

## Reactive Oxygen Species (ROS) Enhancesthe Malignancy of the Human Mesothelial Cells by Regulating Cancer Genes

**Na-Yon Kim[1], Myung-Chul Kim[1], Yu-Ri Seo[2], Yongbaek Kim*[3]**

[1]Laboratory of Clinical Pathology, BK PLUS Program for Creative Veterinary Science Research, College of Veterinary Medicine, Seoul National University, Seoul, The Republic of Korea 151-742; [2]Laboratory of Clinical Pathology, College of Veterinary Medicine, Seoul National University, Seoul, The Republic of Korea 151-742; [3]Laboratory of Clinical Pathology, Research Institute for Veterinary Science, College of Veterinary Medicine, Seoul National University, Seoul, The Republic of Korea 151-742

**Introduction:** Within the tumor tissue, cancer cells areexposed to increased level of reactive oxygen species (ROS). It has beensuggested that ROS contribute to the mesothelial carcinogenesis which is linkedto asbestos fiber exposure and accompanying inflammation, whereas excessiveamounts of ROS have detrimental effects on cell survival. Therefore, maintainingROS homeostasis is essential for cancer cells to survive in the harsh condition.This study was conducted to investigate the unique redox regulatory mechanismof cancer cells by evaluating the expression level of nanog, p53 and PGC1α following ROS insults. Understanding about the mechanism would facilitatethe development of an effective therapeutic approach.

**Materials and Methods:** HMM cell lines, MS-1 and H513, and itsnormal counterpart cell line, Met5a, were cultured and treated with $H_2O_2$for 24 hours. Total RNAs were isolated from these cells. Reverse transcriptionof the extracted RNA into cDNA was achieved. Obtained cDNA were subjected tothe quantitative real time PCR to evaluate relative expression level of nanog,p53 and PGC1α.

**Results:** Relative changes in gene expression level byROS insult were analyzed. Nanog showed increase in expression after ROS insult,showing 6 fold increase on MS1 cells ($p<0.05$). Well-known tumor suppressorgene, p53, revealed decrease in expression level, which decreased into half onH513 cells ($p<0.001$). Contrary to HMMs, Met5a did not show statisticallysignificant change on cancer-related gene expression level after ROS insult. Interestingly,low concentration of 1 μM $H_2O_2$induced 3 fold increase of PGC1αexpression level on Met5a ($p<0.001$), while no significant alterations wereobserved on MS1.

**Conclusions:** This study demonstrated that the responses to ROSinsults differ between cancer and its normal counterpart. In HMM cells, ROS insultenhanced oncogene (nanog) expression, while suppressed tumor-suppressor geneexpression (p53). However, no significant alterations were observed on the nontransformedmesothelial cells. On the contrary, PGC1α expression increased in control group, while MS1cells did not show significant change. Considering that PGC1αplays a crucial role in recovery