

**[P-89]****Arsenic Compound in Fine Particles of Ambient Air and Gene Expression Analysis in Cardiomyocytes, H9C2 cells by Rat Whole Genome Survey Microarray**

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Many evidences have been reported that increased hospital admissions for cardiovascular disease and mortality have been associated with particulate air pollution. Exposure to particles has been shown to modify blood indices such as C-reactive protein, fibrinogen, factor VII, platelet numbers and to increase heart rate and higher risk of myocardial infarction. However, the cardiovascular toxic chemicals in fine particles and its mechanism are not fully understood. Recently, the effects of arsenic compound on the cardiovascular system have been widely studied and epidemiological studies showed a correlation between arsenic and cardiovascular disease. In this study, the concentration of arsenic in fine particles collected from ambient air in northern part of Seoul were analysed and cytotoxicity in cardiomyocytes, H9C2 cells, was measured to investigate the effect of arsenic on myocardial infarction. Regarding the gene expression analysis, AB expression array system of rat whole gene(27K) were used. As results, more than 8,000 genes are found to be down regulated and more than 100 genes are up-regulated at least two fold in the concentration of 0.05 ppm (as As of As<sub>2</sub>O<sub>3</sub>) in which the cytotoxicity was not serious. 200 genes and 13 genes are found down- or up-regulated at least 6 fold, respectively at the same concentration. The dose-dependency of gene expression was also analysed and gene functions were classified by gene classification system, PANTHER. It showed that numerous genes in relation with signal transduction, protein metabolism, cell cycle, cell proliferation and differentiation were down- or up-regulated in cardiomyocytes by exposure of arsenic trioxide.

**Keyword:** Arsenic, fine particle, whole genome microarray, cardiomyocytes