**P104-015**

Measurement of DNA damage with Fpg/Endo III FLARE assay and real time RT-PCR in SD rats exposed to cumene

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To clarify the DNA damage from reactive oxygen species, we measured the DNA damage through Fpg/Endo III FLARE (Fragment Length Analysis with Repair Enzyme) assay and real time RT-PCR. The 80 SD rats assigned to 4 dose groups exposed to cumene vapor for 90 days. With Fpg/Endo III FLARE assay in hepatocytes, we found the OTM (Olive Tail Moment) and TL (Tail Length) significantly increased in no-enzyme treated and Fpg-treated control and 8 ppm groups with 28 days exposure. In Endo III-treated 8 ppm group, significantly increased the values with 90 days exposure. With lymphocytes, it was found the values significantly increased in no-enzyme treated 800 ppm group in 28 and 90 days. It was significantly increased in Endo III-treated 80 ppm for 28 days and 800 ppm for 90 days. From the above findings, FLARE assay was suggested as being available as a biological marker for DNA damage induced by cumene exposure in SD rats. And we used real time RT-PCR for the OGG1 mRNA expression, it had dose-dependent biologic effects in 1 day exposure, but decrease the levels of rOGG1 mRNA. Our findings provide evidence that cumene exposure may cause suppression of rOGG1 in the rat hepatocytes or lymphocytes.

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**P104-016**

Difference in the genotoxicity of chronic inhalation exposure to ethyl tertiary butyl ether in sperm between ALDH2 wild-type and ALDH2 knockout mice

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Ethyl tertiary butyl ether (ETBE) has been used in recent years as a gasoline additive, and widespread human exposure may occur. Previous reports have shown that ETBE only had week health effects on animals. However, acetaldehyde as one of the metabolites from ETBE, has been designated to animals and humans as a potential carcinogen. Acetaldehyde dehydrogenase2 (ALDH2) is primarily responsible for the in vivo metabolism of acetaldehyde as well as other aldehydes, but approximately 30–40% East Asian population is deficient in the enzyme activity. In this study, our objective was to provide data on the potential genotoxic effects of ETBE on ALDH2−/− mice.

**Methods**: Male ALDH2+/+ and ALDH2−/− C57BL/6 line mice aged 8 weeks were used. The target exposure concentrations were 500, 1750, 5000 ppm ETBE and the control group was exposed to filtered air only. Mice were exposed for 6 hr/day and 5 consecutive days/week for 13 weeks. Sperm samples from cauda epididymis were collected 20–24 h after the last exposure. The alkaline comet assay was used to measure the genotoxicity of ETBE in sperm. DNA damage was expressed as Tail Intensity (TI).

**Results**: We found that TI values in the three exposure groups of ALDH2−/− mice and middle, high exposure groups of ALDH2+/+ mice was significantly elevated as compared with ALDH2+/+ control. Furthermore, in ALDH2−/− mice, three exposure groups showed significantly higher TI than the controls. When comparing the TI between the two types of mice, significant differences were found in low and middle exposure groups, but not in control and high exposure groups. To our knowledge, the present study is the first report which showed genotoxic effects of ETBE on sperm in mice, especially in ALDH2−/− mice.

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**P104-017**

Follow up of 2 patients with mesangial IgA glomerulonephritis exposed to cadmium and organic solvents

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Cadmium and some organic solvents are potentially nephrotoxic. Two workers diagnosed with IgA mesangial glomerulonephritis who had the antecedent of having been exposed to cadmium and organic solvents have been followed up during several years.

The first patient is a man of 47 years old, non-smoker. He was diagnosed of IgA mesangial glomerulonephritis 8 years ago. He worked for 12 years as a welder using an autogenous system of welding which electrodes consisting of silver, cadmium, copper and zinc. The patient had proteinuria (2 g/24 h), microhematuria, blood cadmium of 20 µg/l (BEI: 5 µg/l) and cadmium in urine of 85 µg/g creatinine (BEI 5 µg/g creatinine). The environmental level of cadmium in his workplace was 52 µg/m3 (TLV-TWA is 10 µg/m3). The patient was dismissed from his job and was followed annually for 8 years.

The second patient is a man 50 years old, non-smoker, who was detected, 5 years ago, a slight proteinuria and microhematuria. He worked during 23 years in a company that makes plant protection products and he was exposed to organic solvents (acetone, acetyphenone, cyclohexanone, naphthia, toluene and xylene). Three years ago was diagnosed with diffuse mesangial proliferative glomerulonephritis with IgA deposits, despite which he continued working until a year ago that was diagnosed with stage 3 chronic kidney failure secondary to renal disease.

Conclusions: In the patient exposed to cadmium, despite the removal from exposure, concentrations of cadmium in blood and urine remained elevated, and he had proteinuria, but maintained a good renal function. The patient exposed to solvents after separating from exposure had impaired renal function without microhematuria and proteinuria.

These two workers should be regarded as particularly sensitive to exposure to nephrotoxic substances and should be separated from this exhibition indefinitely.

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**P104-018**

Identification of novel interaction proteins of set in trichloroethylene-treated L-02 liver cells

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**Background**: Trichloroethylene (TCE) is a widely used industrial solvent and has been shown to be toxic including promoting carcinogenesis, teratogenesis and mutagenesis. In our previous comparative proteomic study, we found that the levels of onco-