

[PA3-14] [10/18/2002 (Fri) 09:30 - 12:30 / Hall C]

In vitro mutagenicity and genotoxicity study of PAHs and nitro-PAHs using the bacterial revertant (Ames) test and alkaline single cell gel electrophoresis (Comet) assay

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In previous studies, we demonstrated that ambient PM collected from urban site of Korea air could induce DNA damage. Various mutagens and carcinogens present in the urban air differ according to the source of the pollutants. Polycyclic aromatic hydrocarbons (PAHs) and their nitrated compound are produced in the combustion of fossil fuels as diesel emission exhausts. In recent, PAH and nitro-PAH have been identified in urban air particulate matter (PM), and some of them were found to be tumorigenic in experimental animals and humans. Detecting of DNA damage in cells exposed to genotoxic agents is being used to assess the carcinogenic potential of environmental agent. In this study, we examined mutagenicity and genotoxicity of PAH and nito-PAH contained in PM using Ames test and Comet assay with presence or absence of an exogenous metabolic activation system (S9 mixture). Ames test, Salmonella mutagenicity test was conducted using TA98 and TA100 and comet assay, which is the technique for measuring DNA-damage was conducted in human pleural alveolar epithelial (A549) cells. From the results, among 14 PAHs and nitro PAHs tested, most of PAH and nitro PAH tested showed DNA mutation in Ames test and comet assay. It showed that comet assay in vitro was more sensitive than Ames test. Therefore, we suggested that the comet assay in vitro is a useful, sensitive, fast screening system in mammalian cells that can be used as a test to identify genotoxicity of mutagens and environmental complex samples.

Poster Presentations – Field A4. Toxicology

[PA4-1] [10/18/2002 (Fri) 09:30 - 12:30 / Hall C]

Comparative Studies on the Detection of Drug-Toxic Substances in the Formalin Fixed and Unfixed Tissue Specimens

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Gastric contents and blood samples are generally analyzed for the detection of the Drug-toxic substances(DTS) in the postmortem specimens, but tissue specimens from postmortem for the detection of the DTS are, especially, required in the cases that analysis of DTS in blood or gastric contents is impossible because of insufficient or inaccessible specimens in special cases.

Generally, the tissues are fixed in the formalin, so that the detection of the toxic substances from them is not popularly performed due to its unvalidated accuracy.

Therefore, we performed this comparative study for the detection of the DTS in the formalin fixed and unfixed tissue specimens.

The tissue specimens(liver, spleen, heart, lung and kidney) were obtained from the postmortem by autopsy, and fixed with formalin. And we analyzed the amount of the DTS from the formalin fixed tissues, on that day, and after 1, 3, and 7 days, as well as from the formalin unfixed tissues.

This study can give us the helpful data for the detection of some DTS in formalin fixed specimen in future.

[PA4-2] [10/18/2002 (Fri) 09:30 - 12:30 / Hall C]

Development of rapid, sensitive and reproducible paraquat analysis method in the postmortem