[PA3-9] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Biomarkers in feral pigeon for screening endocrine disrupters

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Feral pigeons are among the most familiar birds to humans in most parts of the world. Also they have frequently served as a bioindicator species of human contamination of the cities. Pollutants of the cities are products of human activity and are importantly associated with events during breeding, wintering, commuting, feeding, and so forth of ferals. Amongst the pollutants, endocrine disrupters have been hot issue relating with possibility of human extinction. Therefore these reasons have led to searching available but sensitive biomarkers using appropriate bioindicator in cities such as feral pigeons.
In this study, pigeons were injected intramuscularly in the pectoral muscle with 17 beta-estradiol(E2) in the ratio of 20mg/kg for seven days. Organ (liver, heart, kidney, testis and uterus) to body weight index, total cholesterol level and HDL, LDL, VLDL portion change in serum, vitellogenine induction by E2 in male and female blood, and phagocytosis and NBT reduction ability of Sephadex induced peritoneal macrophage of pigeon were examined.
From the investigation, it was determined that most available but sensitive biomarker in feral pigeon was HDL and LDL portion change in total cholesterol, and organ (liver, testis and uterus) to body weight index was available biomarker as well. VLDL level and vitellogenine induction in blood are probably a good marker in Japanese quail as documented in publications, however they were not shown availability as biomarker in pigeon. Also phagocytosis and NBT reduction ability of macorphage were not suitable for using biomarker.

[PA3-10] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Effect of melatonin on DNA damage by gamma radiation in mouse splenic lymphocytes

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Melatonin, an endogenous compound secreted by the pineal gland in human brain has been reported to act as an antioxidant. The present study was performed to obtain the evidence of the radioprotective function of melatonin on radiation induced DNA damage in mouse spleen. Eight-week-old ICR male mice were irradiated with 6.5 Gy of γ-ray five days after oral administration or intraperitoneal injection of melatonin (250mg/kg body wt.) were sacrificed 3 days later to prepare splenic lymphocytes. The tail moment of DNA single-strand breaks in mouse splenic lymphocytes was evaluated by the Comet assay. Comet assay has been applied to the detection of DNA damage due to environmental toxic materials. In particular, this assay is a novel method to assess DNA single-strand breaks. The pretreatment of the melatonin reduced the tail moment in the comets compared with that of the irradiated control group. This result indicates that melatonin have a little protective effects on the radiation induced DNA damage of mouse splenic lymphocytes when assessed by the Comet assay.

[PA3-11] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Determination of organochlorine pesticides and PCB congeners in Korean human adipose tissue and liver

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Organochlorine pesticides and polychlorinated biphenyls(PCBs) have been used intensively in agriculture and industry for a long time. They belong to a group of contaminants whose occurrence in the environment is a serious concern to environmental chemists and toxicologists due to their resistance to degradation in the environment as well as their potential toxicity. Also, the lipophilic characteristics of these substances are responsible for their ability to bioaccumulate in tissues and organs rich in lipids of men and animals through food chain. Therefore, the measure of the levels of organochlorine pesticides and PCBs in adipose tissue and liver of human populations are good markers in determining the extent of exposure and evaluating the hazards. This study was performed to compare concentrations of organochlorine pesticides(α-BHC, β-BHC, γ-BHC, δ-BHC, p,p'-DDT, p,p'-DDD, p,p'-DDE, endrin, dieldrin, aldrin) and marker PCBs(PCB nos. 28, 52, 101, 118, 138, 153, 180) in adipose tissue and liver collected at autopsies of 10 men and 10 women using gas chromatography equipped with electron capture detector and immunoassay, and to express the data on a lipid adjusted basis. From the results, the significant differences in the levels of organochlorines or PCBs between sexes, districts where they had lived and ages were also investigated.

[PA3-12] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Genotoxic effects of ambient air pollutants by comet assay

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Single cell gel electrophoresis(SCGE) assay, comet assay is rapid, simple and sensitive technique for measuring DNA-damage with a small number of cells.
This assay enables the detection of various forms of DNA-damage in individual cell levels. It is suggest that comet assay is useful tool to evaluate the genotoxic effect of environment media.
Ambient air particulate matters are classified into two distinct modes in size distribution, namely the coarse and fine particles. Correlation between high particulate concentration and adverse effects on human populations has long been recognized. However, the toxicology of these adverse effects has not been clarified.
We investigated the genotoxic effect of PM2.5-10 collected from urban area in human pleural alveolar epithelial(A549)cells.
Genotoxicity of solvent-extractable organic compound (SEOC) in the particulate was measured by comet assay. SEOC extracts of air particulate matters were sub divided into two equal parts. The DMSO fraction would contain mainly the polycyclic aromatic hydrocarbons(PAH), while the lipid-soluble fraction would be enriched with fatty acids.
Results from comet assay show that SEOC sample induced DNA-damage .
Thus, long-term exposure non-lethal dose of air pollutants may lead to the accumulation of DNA lesions. Which may be one of the mechanisms responsible for the chronic adverse health effects of particulate air pollution.

[PA3-13] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

The monitoring on Microbiological Hygiene of Spring Water in Seoul

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Last year(2001), outbreaks of dysentery in south korea and reports of other newly described disease associated with drinking water transmission prompted a reevaluation of source water monitoring criteria for public health protection. The field of microbial indicators was reviewed and each candidate sentinel evaluated in terms of its sensitivity, specificity. But, a clear distinction was made between source spring water monitoring and monitoring in the tap water distribution system in the metropolis.
Microbiological monitoring should be coupled with psychochemical monitoring to establish a long-term history of spring water. Because all natural spring waters vary in the amounts of heterotrophic plate count bacteria, test methods should be employed that are refractory to them. The combination of source spring water protection and regular monitoring serve as sufficient multiple health barriers of residents in Seoul. The