[85-68-7], di-n-octyl phthalate[117-84-0], ditridecyl phthalate[119-06-2], and dibutyl phthalate [84-74-2] were investigated whether they induce DNA strand breakage in mouse lymphoma L5178Y cells with and without S-9 metabolic activation system. From these results, the induction of DNA strand breaks by seven phthalate analogues was not significantly increased at concentrations (0~100 ㎍/㎖) of phthalates used.

[PA4-18] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Monitoring of Kumho River Pollution Levels: Changing of Toxicity Patterns by Month

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Newly developed water pollution monitoring system has been applied for the purpose of environmental toxicology. The monitoring system has been used to evaluate acute toxicity of environmental toxicants from polluted sites and spots.
In the previous work, Mankyung river, Kumho river, Kumkang river and Miho creek were monitored and investigated their pollution levels by using the system. Kumho river was chosen for further environmental investigation because its pollution level and phenol and herbicide level by the water analysis showed similar pattern and pollution levels of the water samples from five spots in the river were measured by the system
The goals of this study is to figure out patterns of acute toxicity levels between June and October to achieve environmental monitoring purpose by using the system and to compare the acute toxicity patterns with chronic consequences of pollutants on fishes, Carasius carasius, in the river.
Five spots from up and down stream of Kumho river were selected. The water samples from the chosen spots were collected and kept on monitoring the biological effect through five months.
Fishes were collected from one spot each of up and down stream of the river in June, September and October. Reduction levels of phagocytic activities of fish macrophages were examined.
The toxicity pattern comparison of water samples form the five spots were similar in every month but the toxicity level of each spot was changed depending on season. The chronic effects on the fish macrophage were not affected by seasonal change.

[PA4-19] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

ERE-Luc Reporter gene assay is a sensitive method to detect EDC activities in Korea river.

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ERE-Luc Reporter gene assay is a sensitive method to detect EDC activities in korea river

K.E. Joung, K.H. chung, S.H. Yeo and Y.Y. Sheen

Environmental xenoestrogens can be released from various routes such as domestic and industrial effluents, leachates from waste disposal sites, incinerator and so on, and contaminate water environments. Various chemicals are usually found as mixtures in the environment and most of them are lipophilic so that they are persistent and accumulative in the environment and organisms. Therefore, it is possible through synergistic effects by a combination of various environmental chemicals, that they produce significant estrogenic effects. There are a number of in vitro assays to screen estrogenic substance. These assays include competitive binding assay, cell proliferative assay(E-screen), yeast-based screen assay, ER-mediated reporter gene assay. In the present work, we use MCF-7 cell line stably transfected with the pERE-Luc plasmid, which consist of three ERE(estrogen responsive element) regulating expression of an enhanced luciferase reporter gene

construct. ERE is core sequence within regulatory regions of estrogen-responsive gene. Using this cell line, we analyzed estrogenic endocrine disruptors within environment. The sensitivity and responsiveness of this assay was assessed by measuring the luciferase activity induced by diethylstilbesterol(DES). When DES was treated, the luciferase activity was induced in dose dependent manner. Next, we tested estrogenicity of environmental samples. Domestic and industrial effluents have been discharged to Kumho River, Kum River, Mankyung River and Miho Stream of Korea, so that they presumed to be contaminated with various organic compounds. River water samples from these rivers were collected and analyzed with ERE-Luc reporter gene assay. 10L of river water were extracted using combined solid-phase extraction in static adsorption mode with soxhlet extraction. Estrogenic pollutants adsorbed to the XAD-4 resin were recovered 98.24 ± 5.90% by elution with ethyl acetate and methylene chloride (1:9). XAD-4 extracts of environmental samples show estrogenic effects on the induction of luciferase activity with variable degrees. And sediment sample, which was extracted by chloromethane , also induced luciferase activity. Both river water sample and river sediment sample stimulated luciferase activity in dose dependent manner. Estrogen receptor antagonist, tamoxifen significantly inhibited environmental sample induced luciferase activity.

[PA4-20] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Development of in vitro screening and test methods for endocrine disruptors to androgen activities in LNCaP cells

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Substantial evidences have been accumulated about the hormone-like effects of exogenous substances such as pesticides and industrial chemicals during past years. The effects of these substances on the endocrine system are believed to be either enhancing or reducing of various endocrine actions. It is necessary to identify putative causal agents by the battery system and to assess their ability to disrupt the endocrine system. A variety of in vitro and in vivo approaches have been used to determine the androgenic effects of environmental chemicals. To compare both MTS assay and quantitative RT-PCR method for assessment of the putative endocrine disruptors on androgenic activity, LNCaP cells, androgen-responsive prostatic cancer cell line, were treated with the various concentrations of testosterone. Their proliferation was assessed by MTS assay using tetrazolium compound. In this assay, the results showed that more than 10 pM concentration of testosterone proliferated the growth of LNCaP cell. In the quantitative RT-PCR method, we measured the effects of testosterone on mRNA expression of androgen receptor (AR), prostate-specific antigen (PSA), bone morphogenetic protein (BMP) and bone morphogenetic protein receptor (BMPR) in LNCaP cells. The results demonstrated that PSA and BMPR-IB mRNA expression were increased beyond the 0.01 pM concentration of testosterone. These observations suggest that the detection of PSA and BMPR-IB mRNA in LNCaP cells by the quantitative RT-PCR method is very sensitive detection method for the endocrine disruptors to androgenic effects.

[PA4-21] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Mutation spectrum of DBCP (1,2-dibromo-3-chloropropane), a carcinogen and possible endocrine disruptor, in the Big Blue Rat2 lacI Transgenic cell line.

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DBCP (1,2-dibromo-3-chloropropane), an effective nematocide, is classified as a possible human