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

carcinogen which caused lung, liver and cervical cancers. It is also reported as an endocrine disruptor that affects on the reproductive system and sperm counts. DBCP causes DNA damage and genotoxicity in animal cells. However, at the present time, the exact mechanism of the action of DBCP with respect to mutagenicity and carcinogenicity is unknown. For this reasons, we studied mutation spectrum induced by DBCP using transgenic Big Blue mutation assay which can investigate both the mutagenic potential and the mechanism of action of suspected mutagen and carcinogen. Big Blue Rat2 cells were treated with 0.748, 0.387 and 0.207 mM of DBCP, resulted in 50, 70 and 80% survival, respectively. The mutant frequency (MF) of *lacI* in control was 4.22×10^{-5}, whereas MF value in DBCP-treated groups showed statistically significant and dose-dependent increase. The DBCP-induced and spontaneous mutation spectrum will be represented at this report in detail.

[PA4-22] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

THE ROLE OF HEPATIC METABOLISM IN THE ACUTE TOXICITY OF PARATHION

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Effects of phenobarbital and/or ketoconazole pretreatment on the acute toxicity of parathion were examined in male Sprague-Dawley rats. Phenobarbital pretreatment (50mg/kg/day, ip) for 4 consecutive days resulted in a significant decrease in inhibition of acetylcholinesterase activity in rats challenged by parathion (2mg/kg, ip). In contrast, ketoconazole (50mg/kg, ip) pretreatment potentiated the toxicity of parathion in brain. The protective effect of phenobarbital was markedly reduced by additional ketoconazole treatment. Phenobarbital treatment at the dosage regimen used in this study increased cytochrome P450 contents, protein contents and hepatic microsomal enzyme activities; p-nitrophenol hydroxylase, p-nitroanisole hydroxylase, aminopyrine N-demethylase and erythromycin N-demethylase. Hepatic aliesterase activity responsible for the detoxication of parathion was increased by phenobarbital. Ketoconazole treatment decreased aminopyrine N-demethylase and erythromycin N-demethylase. Induction of erythromycin N-demethylase by phenobarbital was blocked by ketoconazole treatment. Either phenobarbital or ketoconazole itself did not affect the acetylcholinesterase activity or the total hepatic glutathione contents. The results indicate that hepatic metabolism plays a significant role in the toxicity of parathion, although the target organs of organophosphorus compounds are primarily extrahepatic tissues such as brain and lung.

[PA4-23] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Monitoring Studies on Endocrine Disruptors(Cd, Pb, Hg) in Humans

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ABSTRACT

Human and vital systems were exposed to a variety of endocrine disruptors and accumulated by them which acted as many kinds of hormones. So they affected the number of germ and undermined male reproductive systems, immune systems and endocrine systems. This research was