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