dose dependent manner and their induced activities were decreased by tamoxifen (Tam) treatment. Phenolic compounds, such as octyl phenol (OP), nonyl phenol (NP), biphenol (BP), also induced the luciferase activity in dose dependent manner. Curcumin-derivatives, such as SB118, SB123, induced the luciferase activity and Tam treatment decreased SB118- and SB123-induced luciferase activities. Other curcumin-derivative, SB100, didn't induce the luciferase activity, but inhibited OP-, NP- and BP-induced luciferase activity. Over than 30 flavonoids were tested in this system, and isoflavone, such as biochanin A, daidzein, genistein, showed higher luciferase activity than others. Resveratrol driven from red wine induced the luciferase activity in dose dependent manner. To determine cell proliferative effect of chemicals, SRB assay was performed. E2 and DES increased the SRB readings 20-30 folds over that of control, and their activities were blocked by Tam treatment. Many flavonoids were tested in this system, and similar results to luciferase assay were achieved. These data shows that these methods are valuable tools for screening estrogenic activity of chemicals.

[PA4-18] [10/19/2000 (Thr) 10:00 - 11:00 / [Hall B]]

Reduced generation of reactive oxygen species and proliferation in human neuroblastoma cells treated with 2,3,7,8-tetrachlorodibenzo-p-dioxin

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2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) is one of the most toxic environmental pollutants. Wide range of toxic effects of TCDD have been known to be mediated through a ligand activated transcription factor termed arylhydrocarbon receptor (Ahr), which acts in concert with another structurally related protein, the arylhydrocarbon nuclear translocator. Despite the enormous reports regarding diverse actions of TCDD, the direct effect on the central nervous system has been largely unknown. In this study we have examined the toxic effects of TCDD on the human brain derived neuroblastoma cells. TCDD significantly suppressed proliferation of SK-N-SH cells. To elucidate the action mechanism, we studied possible involvement of reactive oxygen species and oxidative stress since endogenously generated reactive oxygen species are important growth modulatory signals. TCDD significantly reduced lipid peroxidation and generation of superoxide anion in the cells. The effect was not blocked by the treatment with α-naphthoflavone, a Ahr antagonist, or 8-methoxypsoralen, a binding inhibitor of activated Ahr to dioxin responsive element indicating that superoxide reducing action of TCDD is independent from its intracellular receptor. TCDD also significantly inhibited the activities of glutathione reductase, glutathione peroxidase. However, TCDD enhanced the activity of superoxide dismutase. In conjunction with the fact that a particularly risk group may be newborn infants, as it has been shown that TCDD is very efficiently transferred by lactation, the results suggest that TCDD may disturb brain development through inhibition of neuronal proliferation and generation of endogenous reactive oxygen species.
Supported by Korea Food & Drug Administration.

[PA4-19] [10/19/2000 (Thr) 10:00 - 11:00 / [Hall B]]

Gene expression profile and estrogenicity of dibutyl phthalate in MCF7 cells using cDNA microarray and E-screening test

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Various phthalate compounds are used as softeners and plasticizers in a wide range of plastic materials. Since these substances are not limited to the original products, but enter the

environment, they have become widespread environmental pollutants, thus leading to a variety of phthalates that possibly threaten the public health. Among phthalate esters, dibutyl phthalate (DBP) is reported to have estrogenic activity. To elucidate estrogenic activity of DBP, it was studied by E-screen test and cDNA microarrays in MCF7 human breast cancer cells. The E-screen test uses estrogen-sensitive human breast MCF7 cells and compares the cell yield achieved after 6 days of culture in the medium supplemented with 5% charcoal-dextran stripped fetal bovine serum (FBS) with diverse concentrations of 17β-estradiol and DBP. 17β-estradiol of 10^{-8} M and DBP of 10^{-7} M were active in the E-Screen test. Based on the established doses, we compared the pattern of gene expression with the cDNA microarray. It showed some of variation in gene expression patterns among MCF7 cells treated with 17β-estradiol and DBP.

[PA4-20] [10/19/2000 (Thr) 10:00 - 11:00 / [Hall B]]

Suppressive Effect of Bisphenol A on the Cytochrome P450 1A1 Induction in Hepa-1c1c7 Cells

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Bisphenol A (4,4'-isopropylidenediphenol) is a monomer in polycarbonate plastics and a constituent of epoxy and polystyrene resins that are used extensively in the food-packaging industry and it has been shown to possess estrogenic properties. In the present study, we investigated the effect of bisphenol A on TCDD-inducible P450 1A1 gene expression in mouse hepatoma Hepa-1c1c7 cells. 2,3,7,8-Tetrachlorodibenzo-p-dioxine (TCDD)-induced cytochrome P450 1A1-specific 7-ethoxyresorufin O-deethylase (EROD) activity was markedly reduced in the concomitant treatment of TCDD and bisphenol A in a dose dependent manner. TCDD-induced P450 1A1 mRNA level was also markedly suppressed in the concomitant treatment of TCDD and bisphenol A. Transient transfection assay using dioxin-response element (DRE)-linked luciferase revealed that bisphenol A reduced transformation of the aryl hydrocarbons (Ah) receptor to a form capable of specifically binding to the DRE sequence in the promoter of the P450 1A1. These results suggest the down regulation of the P450 1A1 gene expression by bisphenol A in Hepa-1c1c7 cells might be antagonism of the DRE binding potential of nuclear Ah receptor.

[PA4-21] [10/19/2000 (Thr) 10:00 - 11:00 / [Hall B]]

MEASUREMENTS OF ESTROGEN LIKE AND DIOXIN LIKE ACTIVITIES IN KOREAN RIVER WATER USING REPORTER GENE SYSTEM.

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The endocrine system is a complex network of glands and hormones that regulates many of the body's functions, including growth, development and maturation, as well as the way various organs operate. The endocrine glands (the pituitary, thyroid, adrenal, thymus, pancreas, ovaries, and testes) release carefully-measured amounts of hormones into the bloodstream that act as natural chemical messengers, traveling to different parts of the body in order to control and adjust many life functions.
Endocrine disruptor is a synthetic chemical that when absorbed into the body either mimics or blocks hormones and disrupts the body's normal functions. This disruption can happen through altering normal hormone levels, halting or stimulating the production of hormones, or changing the way hormones travel through the body, thus affecting the functions that these hormones control. Chemicals that are known human endocrine disruptors include diethylstilbesterol (the drug DES), dioxin, PCBs, DDT, and some other pesticides.
Domestic and industrial effluents have been discharged to Kumho River, Kum River, Mankyung River and Miho Stream of Korea, so contaminated with various organic compounds. We have