One of the action mechanisms for ginsenoside activity involves binding to intracellular steroid receptors that act as transcriptional factors in the nucleus. We have examined the possiblity that the components of Panax ginseng, ginsenoside (G)-Rb1, G-Rc, G-Re, G-Rf, G-Rh1, and G-Rh2, act by binding to the steroid hormone receptors, estrogen (ER), glucocorticoid receptor(GR), androgen receptor(AR), and retinoid receptor(RAR). Both G-Rb1 and G-Rh1 activated transcription of estrogen-responsive luciferase reporter gene in MCF-7 breast cancer cells and CV-1 kidney fibroblast cells transiently transfected with ERα or ERβ at 10 μM concentration. This activation was inhibited by specific estrogen antagonist, ICI 182, 780. We next examined whether G-Rb1 and G-Rh1 activate an endogenous estrogen-responsive gene. G-Rb1 and G-Rh1 increased the expression of estrogen-responsive gene, C-fos at the mRNA level in MCF-7 cells at 24 h of treatment as measured by quantitative reverse transcriptase-polymerase chain reaction. But screened none of the above ginsenosides including G-Rb1 and G-Rh1 did not activate glucocorticoid receptor, androgen, or retinoid receptor in CV-1 cells transiently transfected with steroid hormone receptors and hormone-responsive reporter plasmids. These data supported the specificity of G-Rb1 and G-Rh1 acting through the ER. Taken together, these results demonstrated that G-Rb1 and G-Rh1 are weak phytoestrogen acting via ER, not glucocorticoid receptor, androgen receptor, and retinoid receptor. This work was supported in part by grants from the Korean Ministry of health and elfare(HMP-00-O-21600-0009, YJL).

[PA1-51] [ 04/18/2002 (Thr) 14:00 - 17:00 / Hall E ]

## Effect of DIDS on Lead Transport into astrocytes

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We have previously reported some results which lead uptake into astrocytes increased time- and concentartion-dependently, and under different pH conditions, levels of lead uptake were greatly different. Divalent metal transporter 1(DMT 1) is not major route although it is involved in lead uptake into astrocyte. Levels of lead uptake at pH 7.4 were 10 times more higher than at pH 5.5.
In this study we investigated what kind of transport system mediate transport of lead into astrocytes. We did effects of inhibitors of anion exchange or H+ co-transport on lead uptake into astrocyte in different pH condition. We used 4,4'-diisothiocyanostilbene-2,2'-disulfonic acid, disodium salt(DIDS), Furosemide, Probenecid, Cyano-hydroxycinnamic acid(CHCA) and Niflumate as a inhibitor.
Immortalized human fetal astrocyte(SV-FHA) cells were cultured in medium containing Dulbecco's modified Eagle's medium and added with inhibitors 15 minutes before lead treatment. Lead uptake assay was done in incubation condition of pH 5.5 and 7.4.
Lead uptake into astrocytes increased time-, pH-, and concentartion-dependently, and was saturable. At pH 7.4 lead uptake was the highest level, and only DIDS inhibit lead uptake but others did not. At pH 5.5 DIDS increased lead uptake. Lead uptake was inhibited by DIDS in dose-dependent manner and done 75% in 100 μM of DIDS. We are investigating about the mechanism of inhibition of lead uptake induced by DIDS.

[PA1-52] [ 04/18/2002 (Thr) 14:00 - 17:00 / Hall E ]

## Effects of extremely low frequency magnetic field on generation of hydroxyl radical

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It has been reported that extremely low frequency magnetic field (ELF-MF) produced increase of lipid peroxidation in vivo. In this study, we examined the effect of ELF-MF on generation of hydroxyl free radical in vitro. Hydroxyl radical is produced by incubation of FeCl3 and H2O2 in Tris-buffer solution. The generation of hydroxyl radical during sham or exposure to ELF-MF was examined by measuring salicylic acid hydroxylation adducts, 2,3-dihydroxylebnzoic acid (DHBA) and 2,5-DHBA using HPLC-electrochemica detector system. Exposure conditions were changed in time (15 min, 30 min) and intensity of ELF-MF exposure (50 V, 100 V, 150V) to find the dependence on them of hydroxyl radical generation. The production of hydroxyl radical was elevated in 15 min exposure to 50 V, 100 V but not 150 V ELF-MF. The increased hydroxyl radical concentration, however, was also found in 30 min exposure to 150 V ELF-MF. Comparing the generation of hydroxyl radical relevant to ELF-MF exposure time, the significant increase of