

treatment. CdCl₂ induced elevation of [ROS]_i was inhibited by N-acetylcystein, GSH precursor. Total GSH level was decreased by CdCl₂ treatment. but ratio of GSSG/GSH was not changed. Simultaneous treatment of BSO, a GSH synthesis inhibitor, with CdCl₂ showed further decrease of total GSH levels. But, NAC treatment resulted in the reduction of Cd-induced depletion of total GSH and GSH/GSSG ratio. Cd-induced 2-deoxyglucose uptake was inhibited in NAC or BSO treated group.

All these results suggest that Cd-stimulated glucose transport might be based on the activation of pentose phosphate pathway of the cells as an antioxidant defense mechanism

[PA3-4] [04/17/2003 (Thr) 14:00 – 17:00 / Hall P]

Effect of β -carotene on DNA damage by gamma radiation in mice

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This study deals with the radiation protection effect of the pretreatment of β -carotene and combination with selenium on the DNA damage in mice after whole body γ -irradiation. This was obtained the radioprotective effect by evaluation of DNA damage levels in mice spleen and blood after irradiation. Six-week-old ICR male mice were administrated with β -carotene and combination with selenium orally once a day for 5 days and then irradiated with 8.0 Gy of γ -ray at a dose rate of 1.0 Gy/min. After that, the mice were sacrificed 3 days later to prepare splenic lymphocytes and blood lymphocytes. Spleen and blood were collected aseptically and isolated the lymphocytes by Ficoll-histopaque gradient centrifugation. Cells embedded in agarose are lysed, subjected briefly to an electric field, stained with a fluorescent DNA binding stain and viewed using a fluorescence microscope. The tail moment(TM) of DNA single-strand breaks in mice splenic and blood lymphocytes were evaluated by single cell gel electrophoresis assay (Comet assay). In splenic lymphocytes, TM values in high administration doses of β -carotene and plus selenium reduced the most compared to low administration dose group and those of all experimental groups in blood lymphocytes showed similar. These results indicate that β -carotene had a little protective effects on the radiation induced DNA damage of the mice splenic and blood lymphocytes but it did show a little difference in radioprotective effectiveness according to the administration dose and combined effect of β -carotene and selenium of high administration dose in splenic lymphocytes was the most effective compared with all experimental groups including blood lymphocytes.

[PA3-5] [04/17/2003 (Thr) 14:00 – 17:00 / Hall P]

Effect of selenium on DNA damage of radiation in mice splenic and blood lymphocyte

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The aim of this study was to investigate the protective effects of selenium and its combination with β -carotene treatments prior to whole-body irradiation in mice. This was obtained the radioprotective effect of selenium and its combination with β -carotene by evaluation of DNA damage levels in mice spleen and blood after irradiation. Six-week-old ICR male mice were administrated with selenium(low dose : 0.5 mg/kg, high dose : 2.0 mg/kg) and plus β -carotene (low dose : 3.0 mg/kg, high dose : 12mg/kg) orally once a day for 5 days and then irradiated with 8.0 Gy of γ -ray. After that, the mice were sacrificed 3 days later. Spleen and blood were

taken and then lymphocytes were isolated. The tail moment(TM) of DNA single-strand breaks in mice splenic and blood lymphocytes were evaluated by single cell gel electrophoresis assay (Comet assay). Comet assay has been applied for detection of DNA damage due to many chemicals like environmental toxic materials. The comet assay is a novel method to assess DNA single-strand breaks, alkali-labile sites in individual cells. TM values of selenium and combined with β -carotene in splenic lymphocytes and blood lymphocytes reduced a little compared to the irradiated control group. In splenic lymphocytes, high administration doses of selenium and β -carotene showed the most radioprotective effect than other experimental groups. In blood lymphocytes, TM values in all experimental groups showed similar. From these results, it showed that selenium was a little radioprotective effect in mice like other antioxidants but combined effect of β -carotene in splenic lymphocytes showed a little unlike blood lymphocytes.

[PA3-6] [04/17/2003 (Thr) 14:00 – 17:00 / Hall P]

Risk analysis of dioxin in human breast milk

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Persistent organic pollutants (POPs) have spread throughout the global environment to threaten human health and damage ecosystems, with evidence of POPs contamination in wildlife, human blood, and breast milk documented worldwide.

Breast milk is an ideal medium for assessing exposures to POPs. POPs enter humans largely as contaminants of dietary animal products, where they sequester in adipose tissue, serum, and breast milk and equilibrate at similar levels on a fat weight basis. With long (5–10 year) half-lives, POPs persist in humans and in breast milk as they do in the environment. Breast milk mimics sediments of rivers or lakes as a storage reservoir for POPs, serves as an indicator of past human exposures or environmental conditions, and complements environmental monitoring data in air, water, soil, and food.(Hooper K. et al., 1999).

In Korea, it is reported that the average concentrations of total PCDD/Fs and Co-PCBs in breast milk were 10.108 pg TEQ/g lipid (n=43) collected at 1st day after delivery, 2.432pgTEQ/g lipid (n=21) at 5th pay, 2.105 pg TEQ/g lipid (n=19) at 30th day, and 1.605 pg TEQ/g lipid (n=21) at 100th day, 1.351 pg TEQ/g lipid (n=14) at 150th day , and 1.103 pg TEQ/g lipid (n=6) at 200th day(KIST, 2003). Based on these results, the average lifetime daily exposure dose(LADD) is estimated 1.77E-2pg/kg/day considering breast milk intake rate and body weight of Korean. The LADD is lower than 1~4 pg/kg bw-day as TDI(tolerable daily intake, WHO).

[PA3-7] [04/17/2003 (Thr) 14:00 – 17:00 / Hall P]

Studies on Pharmaceutical Effects of *Dendropanax morbifera* Lev.

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Hwang Chil (*Dendropanax morbifera* Lev.) belongs to *Aralia elata* group. This plant is only found in Korea and is considered to be along with ginseng. The physiological activities of it have been reported as having scavenging effect on oxygen free radicals and anti-carcinogenic effect. As most of the anti-oxidants were effective on protecting hepatotoxicity from alcohol, hard tissues restoring and skin whitening, the effectiveness of Hwang Chil extracts was screened.

Hwang Chil extracts were given to SD rats (100mg/kg, oral administration) to determine the