induced loss in body and liver weight and inhibited its elevation of serum alanine transaminase, aspartate transaminase, alkaline phosphatase, and bilirubin. Narningenin also increased serum albumin and total protein levels and reduced the hepatic level of malondialdehyde. Furthermore, naringenin suppressed the induction of hepatic fibrosis, as determined by histological evaluation and the immunohistochemical examination showed that naringenin reduced the number of alpha-smooth muscle actin positive hepatic stellate cells.
Our results demonstrate the protective effect against hepatotoxicity and fibrosis induced by DMN suggest that naringenin may be useful in the prevention of hepatic fibrosis development.

[PA4-11] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Effects of organic germanium and caffeic acid phenethyl ester on immune system of BALB/c mice following a 14-day oral exposure

Park JaeHyun, Lee JongKwon, Kim HyungSoo°, Chung SeungTae, Eom JunH, Kim KyungA, Paik SoonYoung, Oh HyeYoung

National Institute of Toxicological Research

The present study was conducted to determine the effects of bis-carboxyethyl germanium sesquioxide(Ge-132) and caffeic acid phenethyl ester(CAPE) on immune system in female BALB/c mice. The mice were orally exposed continuously to Ge-132 (0, 50, 100, or 200mg/kg), or CAPE (0, 5, 10, or 20mg/kg) for 14 days. Immunomodulatory activity was evaluated by assessment of body and organ weight, lymphocytes blastogenesis, splenic cell plaque forming cells (PFC) assay and lymphocyte subpopulation by flowcytometry. Even though the significant change of body weight was not observed in both treated group, exposure to Ge-132 resulted in the increase of spleen weight and cellularity of spleen at the dose of 200mg/kg, whereas the treatment of CAPE resulted in the decrease of the thymus weight and/or cellularity of thymus and spleen at the all exposed group. Mitogen lipopolysaccharide (LPS) and concannavalin A (ConA) induced Lymphocyte blastogenesis was not affected by Ge-132 and CAPE, except B-lymphocyte blastogenesis was induced at the dose of Ge-132 100mg/kg. In the case of T and B cells subpopulation in spleen, CD3+ cells were increased and CD19+ cells were decreased at the dosage group of Ge-132 100mg/kg, there was not significant change in CAPE treated group. Also, CD4+ cells were decreased in exposure to Ge-132 but increased in exposure to CAPE. The IgM antibody response to sheep red blood cell (SRBC) measured by PFC was only increased in animals treated with more than 10mg/kg of CAPE treated groups. The results of this study suggest that Ge-132 and CAPE have an immunomodulatory activity in some cases and these used methods in this study are useful to evaluate the functional foods with immunomodulatory effect.

[PA4-12] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Investigation of potential estrogenic activity of bioallethrin in vitro and in vivo assays

Kim SoonSun°, Rhee GyuSeek, Lee Rhee Da, Kwack SeungJun, Lim KwonJo, Park ChulHoon, Lee GeunShik, Jeung EuiBae, Kil KwangSup, Choi KwangSik, Park KuiLea

National Institute of Toxicological Research,KFDA/Chungbuk National University

Many pesticides possess hormonal activity and have been thus classified as endocrine disruptors. Bioallethrin is one of the pyrethroids, synthetic derivatives of naturally occurring pyrethrins. These pyrethroids including bioallethrin have been developed as insectides due to their high insecticidal potency and low mammalian toxicity. Currently, bioallethrin is used to

eradicate pests and insects in Korea, providing potential for human exposure. It, however, could adversely affect the reproductive endocrine system if it has hormonal activity. Little is known about hormonal activity of bioallethrin throughout the world. This study investigated the potential estrogenic (antiestrogenic) activity of bioallethrin by immature rat uterotrophic assay and Calbindin-D9k (CaBP-9k) gene expression assay. In the uterotrophic assay using 18-day old SD rats, subcutaneous treatment of bioallethrin (5 to 800 mg/kg/day) for 3 days had no significant effects on uterine wet weights, compared with vehicle control group, but led to statistically-significant enhancements in E2-increased their weights at all doses tested. In addition, this effect was statistically significant at certain doses. This chemical also enhanced E2-induced CaBP-9k mRNA expression in Northern blot analysis, although not statistically- significant. In conclusion, our results suggest that bioallethrin might mimic estrogen. However, since its estrogenic (antiestrogenic) activity was not clearly elucidated in this experiment, more-detailed further studies with various screening test methods are needed.

[PA4-13] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Hepatoprotective Effects of the Acteoside on Carbon tetrachloride ?Induced Liver Damage in Mice

Kyung Jin Lee1 Eun-Rhan Woo1 Chul Yung Choi2, Hye Gwang Jeong1

Department of Pharmacy, College of Pharmacy, Research Center for Proteineous Materials, Chosun University, Kwangju, Korea Division of Food Science, Jinju International University, Jinju, Korea

The protective effects of acteoside, a phenylethanoid glycoside, on carbon tetrachloride-induced hepatotoxicity and the possible mechanisms involved in this protection were investigated in mice. Pretreatment with acteoside prior to the administration of carbon tetrachloride significantly prevented the increased serum enzymatic activities of alanine and aspartate aminotransferase in a dose-dependent manner. In addition, pretreatment with acteoside also significantly prevented the elevation of hepatic malondialdehyde formation and the depletion of reduced glutathione content in the liver of carbon tetrachloride?intoxicated mice. However, hepatic reduced glutathione levels and glutathione-S-transferase activities were not affected by treatment with acteoside alone. Carbon tetrachloride?induced hepatotoxicity was also essentially prevented, as indicated by a liver histopathologic study. The effects of acteoside on the cytochrome P450 (P450) 2E1, the major isozyme involved in carbon tetrachloride bioactivation were also investigated. Treatment of mice with acteoside resulted in a significant decrease of P450 2E1-dependent p-nitrophenol and aniline hydroxylation in a dose-dependent manner. Consistent with these observations, the P450 2E1 expressions were also decreased, as determined by immunoblot analysis. Acteoside showed anti?oxidant effects in FeCl2?ascorbate induced lipid peroxidation in mice liver homogenate and in superoxide radical scavenging activity. These results suggest that the protective effects of acteoside against carbon tetrachloride-induced hepatotoxicity possibly involve mechanisms related to its ability to block P450?mediated carbon tetrachloride bioactivation and free radical scavenging effects

[PA4-14] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Platycodi Radix inhibits endothelial cell invasion and angiogenesis

Shin DongWeon°, Lee Kyung Jin, Jeong Hye Gwang

Department of Pharmacy, College of Pharmacy, Research Center for Proteineous Materials, Chosun University, Kwangju, Korea

Herbal medicines are increasingly being utilized to treat a wide variety of disease processes. In