

number, and protein content were significantly decreased in these cell models. Counted cell number, cell viability and protein content are significantly higher in AST than in MGC, which were exposed to MeHg (5 or 10 μ M) for 6 days. Western blot and immunocytochemistry also showed qualitative increases of GS protein in these cells. Apparent morphological alteration of the glial cells was observed at 5 and 10 μ M MeHg-exposed groups. To investigate the effect of glutamate on MeHg toxicity, MeHg (10 μ M) and glutamate (0.5 μ M) were co-treated to the MGC or AST for 6 days. Exposure of glutamate (0.5 μ M) to AST or MGC has no effect on GS activity. However, MeHg (10 μ M) exposed cells or cells co-treated with MeHg and glutamate showed significant increases of the GS activity and GS protein. Counted cell number, cell viability and protein content were dose-dependently decreased in MeHg exposed- or co-treatment groups, and were significantly higher in AST than MGC. AST was more resistant to decrease of cell number, cell viability and protein content and % increase of GS activity in AST was significantly higher than in MGC. This data provide evidence that increase of GS activity may have a protective role in MeHg toxicity in glial cells.

[PA4-18] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Effect of TCDD on the expression of rat hepatic cytochrome P450 2A1: Assessment of the effect in vivo and in a hepatocyte culture system

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This study aimed to determine the effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin(TCDD, dioxin) in P450 (CYP) 2A1 expression, using in vivo and in cultured hepatocyte system, in comparison with traditional TCDD-mediated induction of CYP 1A1. Hepatic microsomal testosterone 7 α -hydroxylase activity as a marker of CYP2A1 was increase in both male and female rats. As judged by the change in testosterone metabolic activity catalyzed by liver microsome, oral administration of TCDD into rats increased the CYP 2A1 time- and dose-dependently. In cultured hepatocytes, CYP2A1 protein induction by TCDD was matched with changing in CYP2A1 activity. Northern blot analysis confirmed extensive increase of CYP2A1 mRNA induced by TCDD. In addition, resveratrol, specific inhibitor of CYP1A1, had the greatest inhibitory effect (approximately 60%) in CYP2A1 mRNA, caused by the AhR ligand TCDD in a concentration-dependent manner.

These results suggest that the potentiation of CYP2A1 induction by TCDD is regulated at the level of transcription of the CYP2A1 gene, presumably via binding to XRE core sequence and the expression of CYP2A1 is induced by addition of TCDD, which was in agreement with CYP1A1 expression by AhR-TCDD complexes. Despite the fact that CYP1A1 induction is used widely as a measure of environmental TCDD exposure, the data presented in this study suggest that induction of CYP2A1 enzymes is another indicator of exposure to TCDD.

[PA4-19] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

In utero exposure of permethrin alters sexual maturation of male and female rat

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Permethrin is one of the pyrethroid insecticides, which are synthetic derivatives of natural pyrethrins contained in the flowers of pyrethrum. Permethrin is a widely used agent for indoor and outdoor pest control due to its high insecticidal potency and low mammalian toxicity. However, any chemical with hormonal activity like estrogen could affect reproductive function including sexual maturation. Our previous study indicated that permethrin showed estrogenic activity. Therefore, we examined whether permethrin changes the sexual maturation of male and female rat. Subcutaneous treatment with permethrin(10 mg/kg) 6 to 18 of gestational day(GD) led to significant delay in vaginal opening of female offspring, and also delay in vaginal opening was observed with intraperitoneal injection (200 mg/kg) 6 to 18 of GD. Male rats exposed to permethrin had significant decreases in anogenital distances (AGDs) on postnatal day (PND) 3, 15 and