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CYP Genes Expressed by TCDD are Reduced by Panax Ginseng Extracts in Rat Liver

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2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is one of the most toxic environmental pollutants that induce a variety of deleterious effects on human health including hepatotoxicity and hepatocarcinogenesis. In the present study, we investigated in vivo effects of Panax ginseng extracts on expression of TCDD-related genes in the liver of TCDD treated rat. For this study, Sprague Dawley rats were divided into four groups and exposed to TCDD (25 mg/kg, single i.p), Panax ginseng extracts (100 mg/kg every other day for 1 month), and TCDD/Panax ginseng extracts, respectively. Panax ginseng extracts were intraperitoneally administered to rats at 100 mg/kg/every other day for 1-month period after single i.p dose of TCDD. Using RT-PCR, we examined the mRNA expression level in rat liver on 1, 5, 16 and 32 days after injection. On 1 day after administration, CYP1A1, 1A2, and 1B1 mRNA levels were significantly increased in TCDD-treated rat liver. Interestingly, the CYP1A1/2 mRNA levels at TCDD/Panax ginseng extracts-treated group were dramatically decreased to the levels of ginseng extracts-treated or control group. On 5, 16 and 32 days after administration, the transcripts of CYP1A2 and CYP1B1 at TCDD/Panax ginseng extracts-treated group were decreased to the mRNA level of control group, respectively. These results suggest that Panax ginseng extracts may have an inhibitory potency of AhR-mediated signal transduction, and may be an effective agent in the prevention of TCDD-associated disease. [Supported by a grant from KRF2003-005-I00075]

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