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Preventive Effect of Korean Red Ginseng on TCDD-induced Toxicity in Male Guinea Pigs

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This study was carried out to investigate the preventive effect of Korean Red ginseng water extract (KRG-WE) on the toxicity induced by 2,3,7,8-tetrachloro- dibenzo-*p*-dioxine (TCDD), one of the most notorious toxic environmental pollutants belonging to the group of polyhalogenated aromatic hydrocarbons. Normal control (NC) group guinea pigs (180~200 g) received vehicle and saline, and TCDD-treated (TT) group TCDD and saline. KRG-WE was administered (*i.p.*) to the test group animals for 30 days at a dose of 100 mg (P100) and/or 200 mg/kg b.w. (P200) on dry weight basis. Toxicity was induced by a single intraperitoneal injection of TCDD (1 μg/kg b.w.) 1 week after KRG-WE treatment.

Increase in body weight was retarded to a larger extent by TCDD exposure. Body weight of TT group was significantly decreased 10 days after TCDD exposure. Body weight of P100 group increased until 24 days and that of P200 group increased throughout the experimental period ($P<0.01$), although the increasing rate was slower than that of NC group. In addition, decrease in body weight was not observed in test groups. Decrease in white blood cell and platelet cell numbers revealed same trends ($P<0.05$). Increases in blood glucose, amylase, lipase, total cholesterol, triglyceride, GOT, GPT, and LDH levels were

significantly prevented by the KRG-WE treatment ($P<0.05$).

Weight decrease in liver ($P<0.05$) and testis ($P<0.01$) was remarkably protected by the treatment of KRG-WE. TCDD induced hepatocellular swelling and apoptosis. However, the injury was markedly alleviated by the KRG-WE treatment. Atropy and severely impaired spermatogenesis were observed in the testis of TT group animals. On the other hand, KRG-WE remarkablely prevented the injury. The effect was more significant in P200 group. Serological parameters of pancreas indicated that pretreatment pf KRG-WE significantly protected TCDD-impared pancreatic functions.

From these results, we could find the preventive role of KRG-WE on TCDD-induced toxicity by monitering the body weight, serological parameters, organ weights, and histopathological observation. However, mode of action of Korean Red ginseng on the prevention of TCDD-induced toxicity awaits further investigation.