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# Induction of Oxidative Stress in Male Guinea Pig Liver Following Single Exposure to 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin

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Oxidative stress may play a role in the toxic manifestations of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). Therefore, following the administration of TCDD (1 g TCDD/kg body weight, single i.p injection) we sacrificed at 4 weeks and examined the effects of TCDD on the oxidative stress-related enzymes and lipid peroxidation in the liver of male guinea pigs. TCDD led to the marked increase of the formation of thiobarbituric acid-reactive substances (TBARS) as a measurement of lipid peroxidation in the cytosolic fraction of liver. The activities of cytosolic glutathione S-transferase (GST), glutathione reductase (GR) and copper/zinc-superoxide dismutase (Cu/Zn-SOD) were also significantly induced following the acute exposure to TCDD. However, when compared with the control, TCDD showed no effect on the catalase activity. Our results also showed that glutathione peroxidase activity was not affected by TCDD in the guinea pig liver. Based on these results, it is suggested that TCDD induce an oxidative stress in the liver of guinea pig, which supports the potential use of two antioxidant enzymes, GST and GR, as potential biomarkers for environmental exposure to TCDD.