

Protective Effects of YCY against Hepatotoxicity Induced by 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) in Rats

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Introduction

Polychlorinated dibenzo-*p*-dioxins (PCDDs) are widespread, persistent, and highly toxic environmental pollutants. TCDD is the most potent congener among PCDDs and the most thoroughly investigated model compound of this class of chemicals. These compounds elicit a variety of common biochemical and toxic response, including specific binding to the cytosolic AHR [1] and induces a variety of biological response ranging from induction of cytochrome P-450 1A (CYP1A) to liver damage and cancer [2]. This study was carried out to investigate the protective effects of YCY, extract of a cricket, *Gryllus bimaculatus*, on hepatotoxicity in 6-week-old SD rat exposed to TCDD

Materials and Methods

Twenty eight male rats were divided into 4 groups: normal control (NC) group received vehicle and saline; TCDD-treated (TT) group received single intraperitoneal injection of TCDD (60 µg/kg) and saline; preventive group received YCY (100 and 200 mg/kg) for 2 weeks before and after TCDD treatment.

Results and Discussion

The livers in TCDD-exposed rats appeared a severe hypertrophy and changed to yellow brown color in gross finding, and weights of liver increased. However, these lesions and weight increase in liver caused by TCDD were protected by YCY 200 mg/kg treatment. The elevated serum activities of alanine transaminase (ALT)

and aspartate transaminase (AST) due to TCDD were significantly decreased compared with that of the TT rats by YCY 100 and 200 mg/kg treatment. In histological examinations, there were a moderate necrosis of hepatic cells, cytoplasmic vacuolizations and inflammatory cell infiltration in the liver of TCDD-exposed rats. However, the lesions were inhibited by YCY 200 mg/kg treatment. These findings indicate that YCY may have a protective effect against TCDD-induced hepatotoxicity in rats.

Table 1. Effect of YCY on TCDD-induced liver injures

	NC group	TT group	YCY 100 mg/kg	YCY 200 mg/kg
Liver weight(g)	2.75±0.74	4.56±0.37	4.74±0.17	4.36 ± 0.76
AST(IU/L)	168.77±15.01	744.46±314.83	195.84**±44.15	289.60**±110.72
ALT(IU/L)	57.63±10.13	75.63±26.59	37.93**±6.24	39.75*±6.35

* Significantly different from TT group ($p < 0.05$)

** Significantly different from TT group ($p < 0.01$)

Reference

1. Safe, S. Crit. Rev. Toxicol. 1990, 21, 51-88.
2. Pohjanvirta, R. Pharmacol. Rev. 1994, 46, 483-549.