Protective effects of Chlorella vulgaris on liver toxicity in cadmium-administered rats.

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Abstract
The biochemical mechanisms of Chlorella vulgaris protection against cadmium (Cd)-induced liver toxicity were investigated in male Sprague-Dawley rats (5 weeks of age, weighing 90-110 g). Forty rats were randomly divided into one control and three groups treated with 10 ppm Cd: one Cd without Chlorella (Cd-0C), one Cd with 5% Chlorella (Cd-5C), and one Cd with 10% Chlorella (Cd-10C) groups. The rats had free access to water and diet for 8 weeks. Body weight gain and relative liver weight were significantly lower in the Cd-0C group than in Cd-5C and Cd-10C groups. Rats in the Cd-0C group had significantly higher hepatic concentrations of Cd and metallothioneins (MTs) than in the Cd-5C or Cd-10C group. The hepatic MT I/II mRNA was expressed in all experimental rats. MT II was more expressed in the Cd-5C and Cd-10C groups than in the Cd-0C group. Morphologically, a higher level of congestion and vacuolation was observed in the livers of the Cd-0C group compared to those of the Cd-5C and Cd-10C groups. Therefore, this study suggests that C. vulgaris has a protective effect against Cd-induced liver damage by reducing Cd accumulation and stimulating the expression of MT II in liver. However, the details of the mechanism of C. vulgaris on liver toxicity remains to be clarified by further studies.