

**Mechanism of protection by zinc against
mercuric-chloride toxicity in rats: Effects of zinc and
mercury on glutathione metabolism**

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摘要

Abstract

To investigate the mechanism by which zinc suppresses mercury toxicity, the effects of zinc and mercury on glutathione (GSH) metabolism in the rat kidney were studied. When the time course of GSH level in the rat kidney was examined at 2, 6, and 12 h after treatment of rats with both metals, an increase of GSH was found and was apparently related to the activation of some GSH-associated enzymes. In the kidney of rats treated with both metals, the response of the protective function involving GSH and GSH-associated enzymes depended on the magnitude of mercury toxicity but appeared to be independent of the zinc dosage. The administration of diethyl maleate (DEM), which depletes GSH, increased lipid peroxidation and mercury toxicity concomitantly with a decrease of GSH level in the kidney of rats treated with zinc and mercury. In conclusion, the data suggest that an increased GSH level in the kidney resulting from the activation of GSH-associated enzymes plays a role in the protective effect of zinc against mercury toxicity.