

Amelioration of ferric nitrilotriacetate-induced hepatotoxicity in Wistar rats by diallylsulfide

Abstract

Garlic contains diallylsulfide (DAS) and other structurally related compounds that are widely believed to be active agents in preventing cancer. This study shows the effect of DAS (a phenolic antioxidant used in foods, cosmetics, and pharmaceutical products) on ferric nitrilotriacetate (Fe-NTA)-induced hepatotoxicity in rats. Male albino rats of Wistar strain weighing 125–150 g were given a single dose of Fe-NTA (9 mg kg⁻¹ body weight, intraperitoneally) after 1 week of treatment with 100 and 200 mg kg⁻¹ DAS in corn oil respectively administered through the gavage. Fe-NTA administration led to 2.5-fold increase in the values of both alanine transaminase and aspartate aminotransferase, respectively, and 3.2-fold increase in the activity of lactate dehydrogenase, microsomal lipid peroxidation to approximately 2.0-fold compared to saline-treated control. The activities of glutathione (GSH) and other antioxidant enzymes decreased to a range of 2.2–2.5-fold. These changes were reversed significantly ($p < 0.001$) in animals receiving a pretreatment of DAS. DAS protected against hepatic lipid peroxidation, hydrogen peroxide generation, preserved GSH levels, and GSH metabolizing enzymes to 60–80% as compared to Fe-NTA alone-treated group. Present data suggest that DAS can ameliorate the toxic effects of Fe-NTA and suppress oxidant-induced tissue injury and hepatotoxicity in rats.