

Antioxidant and nephroprotective potential of butylated hydroxyanisole against ferric nitrilotriacetate-induced oxidative stress and early tumor events

Abstract

The present study was aimed to study protective effect of butylated hydroxyanisole (BHA), a phenolic antioxidant used in foods on ferric nitrilotriacetate (Fe-NTA)-induced nephrotoxicity. Male albino rats of Wistar strain (4–6 weeks old) weighing 125–150 g were used in this study. Animals were given a single dose of Fe-NTA (9 mg kg^{-1} body weight) after treatment with BHA (1 and $2 \text{ mg animal}^{-1} \text{ day}^{-1}$). Fe-NTA treatment enhanced ornithine decarboxylase (ODC) activity to 5.3-fold, and [^3H]-thymidine incorporation in DNA to 2.5-fold in kidney compared with the corresponding saline-treated control, whereas glutathione (GSH) levels and the activities of antioxidant enzymes decreased to a range of 2- to 2.5-fold in kidney. These changes were reversed significantly in animals receiving a pretreatment of BHA. The enhanced ODC activity and DNA synthesis showed a reduction to 2.12-fold and 1.15-fold, respectively, at a higher dose of $2 \text{ mg BHA day}^{-1} \text{ animal}^{-1}$, compared with the Fe-NTA-treated groups. Pretreatment with BHA prior to Fe-NTA treatment increased GSH and the activities of antioxidant enzymes to a range of 1.5- to 2-fold in kidney. The results indicate that BHA suppresses Fe-NTA-induced nephrotoxicity in male Wistar rats.