

Strobilanthes crispus attenuates renal carcinogen, iron nitrilotriacetate (Fe-NTA)-mediated oxidative damage of lipids and DNA

Abstract

This study was aimed to evaluate the effect of *Strobilanthes crispus* extract for possible protection against lipid peroxidation and DNA damage induced by iron nitrilotriacetate (Fe-NTA) and hydrogen peroxide (H₂O₂). Fe-NTA is a potent nephrotoxic agent and induces acute and subacute renal proximal tubular necrosis by catalyzing the decomposition of H₂O₂-derived production of hydroxyl radicals, which are known to cause lipid peroxidation and DNA damage. Incubation of postmitochondrial supernatant and/or calf thymus DNA with H₂O₂ (40 mM) in the presence of Fe-NTA (0.1 mM) induces lipid peroxidation and DNA damage to about 2.3-fold and 2.9-fold, respectively, as compared to control (P < 0.05). In lipid peroxidation protection studies, *S. crispus* treatment showed a dose-dependent inhibition (45-53% inhibition, P < 0.05) of Fe-NTA and H₂O₂ induced lipid peroxidation. Similarly, in DNA damage protection studies, *S. crispus* treatment also showed a dose-dependent inhibition (18-30% inhibition, P < 0.05) of DNA damage. In addition, the protection was closely related to the content of phenolic compounds as evident by *S. crispus* extract showing the value of 124.48 mg/g total phenolics expressed as gallic acid equivalent (GAE, mg/g of extract). From these studies, it is concluded that *S. crispus* inhibits peroxidation of membrane lipids and DNA damage induced by Fe-NTA and H₂O₂ and possesses the potential to be used to treat or prevent degenerative diseases where oxidative stress is implicated. © 2010 Springer Science+Business Media, LLC.