



Protective effect of ginger on diazinon-induced brain toxicity

M. Hamzeh^{1,2}, S. Yaghubi Beklar^{1,3}, F. Talebpour Amiri^{2*}

¹Student Research Committee, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran.

²Department of Anatomy, Faculty of Medicine, Molecular and Cell Biology Research Center, Mazandaran University of Medical Sciences, Sari, Iran.

³Department of Toxicology, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran.

Background and objectives: Diazinon (DZN), an organophosphate insecticide, is widely used in agriculture. One of its deleterious effects is on neural systems. Diazinon with acetylcholinesterase activity and lipid peroxidation induces brain toxicity. Ginger, as a medicinal plant, has antioxidant and anti-inflammatory properties. The aim of present study was to evaluate the protective effects of ginger on DZN-induced brain toxicity. **Methods:** In this experimental study, 32 adult male Wistar rats were divided randomly into four groups: control group (received only normal saline), ginger group (100 mg/kg/day, gavage, for 30 days), DZN group (10 mg/kg/day, *i.p.*, for 30 days), and ginger+DZN group (received ginger an hour before DZN). In order to investigate the lipid peroxidation and antioxidant status in rats, the level of malondialdehyde (MDA) and activities of glutathione have been studied in brain of rat. **Results:** The results revealed that treatment with DZN increased MDA level significantly ($p < 0.05$) and decreased GSH content significantly ($p < 0.05$) in the rat brain. Ginger reduced lipid peroxidation and increased GSH in the DZN treated rats compared with DZN alone group. **Conclusion:** The data indicated that DZN induced brain toxicity by increasing oxidative stress. Our results suggested that ginger with antioxidant activity showed a marked protective effect against DZN-induced brain injury that could ameliorate oxidative stress.

Keywords: brain toxicity, diazinon, ginger, oxidative stress