

Dichlorvos and lindane induced oxidative stress in rat brain: Protective effects of ginger

Poonam Sharma, Rambir Singh

Departments of Zoology

ABSTRACT

Background Dichlorvos and lindane pesticide causes toxicity in animals including humans. Ginger (*Zingiber officinale*) is widely used as a culinary medicine in the Ayurvedic system of medicine, possessing a number of pharmacological properties. Objective This study was designed to assess ameliorating effects of ginger juice in dichlorvos and lindane induced neurotoxicity in wistar rats. Materials and Methods Dichlorvos (8.8 mg/kg bw) and lindane (8.8 mg/kg bw) were orally administered alone as well as in combination to adult male and female wistar rats for 14 days followed by the post-treatment of ginger juice (100 mg/kg bw) for 14 days. Lipid peroxidation (LPO), reduced glutathione (GSH), and activities of antioxidant enzymes such as superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione S-transferase (GST), glutathione reductase (GR), quinine reductase (QR), and protein level were measured to evaluate the toxicity of these pesticides in brain. Results Dichlorvos and lindane administration alone and in combination increased LPO and decreased the GSH level, SOD, CAT, GPx, GST, GR, QR activity, and protein. Oxidative stress due to abnormal production of reactive oxygen species (ROS) is believed to be involved in the toxicities induced by these pesticides. Post-treatment of ginger juice decreased LPO and increased the level of GSH, SOD, CAT, GPx, GST, GR, QR activity and protein in the brain of rats. Conclusions The results indicated that dichlorvos and lindane induced tissue damage was ameliorated by ginger juice.

KEYWORDS

Dichlorvos . lindane . oxidative stress . reactive oxygen species . *Zingiber officinale*

REFERENCES