

Abstract

This thesis was designed to study dose-related and age-related effects of the mixture of four pesticide residues extract (chloropyrifos, profonofos, fenitrothion and dicofol) on Oxidative Stress, Genotoxicity and immunotoxicity, and Protective Potential of natural Antioxidants (garlic 250 mg/kg and alpha lipoic acid 60mg/kg), 120 males of Albino rats will be divided into two main groups according to age; weaning group (2 months age) and Adult group (6 months age). Each age group of rats were divided into 6 subgroups (*10 rats in each*) the 1st group served as control, *the 2nd & 3rd* groups were orally treated with high & low level of pesticides residue mixture, respectively, the 4th group served as +ve control (antioxidants only), the 5th & 6th groups were orally treated with antioxidants 1h after administration of high & low level of pesticides residue mixture, respectively, All groups were force-fed by gastric intubations 5 days per week for 3 months. The oxidative stress status of treated animals has been evaluated by assessment of reduced glutathione (GSH), Glutathione-S-Transferase (GST), malondialdehyde (MDA). In addition, the acetylcholinesterase (AChE) activity was measured as a biomarker of toxicity. The mean *comet tail length* and *Comet DNA %* were used to measure DNA damage. We used IgG, IgM, rate of leucocyte phagocytosis and of lymphocyte transformation as immunotoxicological biomarkers to test the immune function as well as Histopathological studies in lymph node. Our result revealed that pesticide mixture induce inhibitory effect on AChE, depletion in GSH content, alteration in GST and elevation in lipid peroxidation (MDA). A significant increase in mean *comet tail length* and *Comet DNA %* indicating DNA damage was observed. The damage was dose related. The results showed that pesticides mixture produced a decrease in Both IgG and IgM, the rate of lymphocyte transformation and the rate of leucocyte phagocytosis also decrease in both age groups. In additions, our result revealed that natural antioxidants (ALA and garlic extracts) have more or less counteracting effect on Oxidative Stress, Genotoxicity and immunotoxicity caused by pesticides.

(Key words: pesticide residues, acetylcholinesterase, Oxidative Stress, lipid peroxidation, Genotoxicity, comet assay, immunotoxicity, lymphocyte transformation, phagocytosis)