

Biochemical, DNA and Electron Microscopic Changes in Carbamate Exposed Workers

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ABSTRACT Carbamates are the type of pesticides which are used mainly in agriculture as insecticides, fungicides, herbicides, nematocides or sprout inhibitors. In addition they are used as biocides in industries and other applications and in household products. They are mainly used to improve the crop yield but their use is also linked to various harmful effects to the users and farmers exposed to them. Their exposure is linked to free radical generation & thus oxidative stress and various types of damages to biomolecules such as DNA, lipids, proteins etc. So, the aim of present study was to evaluate the effect of carbamate exposure on the oxidative stress marker like lipid peroxidation and antioxidant reduced glutathione along with change in RBC membrane, protein profile and genotoxicity by DNA fragmentation analysis. In the present work, we observed a significant increase ($p < 0.001$) in lipid peroxidation while the levels reduced glutathione was significant decrease in pesticide exposed workers compared to control healthy subjects. Electron microscopy of RBC showed available degree of cellular changes and bands of some small molecular weight protein get disappeared and some bands were over expressed in the pesticide exposed samples. The damage to DNA molecule resulting in fragmentation of genomic DNA has been seen in pesticide exposed samples. Results of present study suggested that there is an initiation of oxidative stress in carbamate exposed worker and hence could be responsible for the onset of damage and eventual loss.