

Genotoxic and Cytotoxic Effects of Methidathion Pesticide

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Abstract : Methidathion (MTD) (Trade name Supracide®) is a non-systemic organophosphorus insecticide used intensively worldwide including Saudi Arabia. However, there is a lack in published studies about its genotoxicity. In this study we evaluated MTD toxicity in rat bone marrow cells (in vivo) and in lymphocytes (in vitro) using different doses based on LD50. MNNCE (Micronucleated normochromatic erythrocytes) and MNPCE (Micronucleated polychromatic erythrocytes), NDI (Nuclear division index) and NDCI (nuclear division cytotoxicity index), necrotic and apoptotic cells were recorded in rat's bone marrow samples. CA, MI (number of cells undergoing mitosis) necrotic, and apoptotic cells recorded in lymphocytes. Results showed that there was a slight increase in the frequency of micronucleated bone marrow cells. However, no structural chromosomal aberrations were detected in vivo or in vitro. On the other hand, the results showed significant increase in necrotic and apoptotic cells following MTD administration in a dose-dependent manner comparing to positive and negative control groups. In light of these results, MTD can be considered highly cytotoxic and moderate genotoxic, and precaution should be taken when using MTD.

Keywords : methidathion, micronucleus, NDI, NDCI, toxicity, chromosomal aberrations

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