

## Genotoxic Effects of Environmental Contaminant Methidathion and Triadimenol Pesticides

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**Aim of the study:** Pesticides are applied in fruits, vegetables and crops at different growth stage to protect against pest and during post-harvest to preserve their quality. They are also used in the household, workplace, hospitals and schools. This application has resulted in widespread environmental contamination in surface and groundwater resources, soil, air, as well as crops etc. to which they are applied. This contamination induces toxic effects to non-target organisms including human health. The aim of this study was to investigate genotoxic potential of methidathion (MD) and triadimenol (T) pesticides using chromosomal aberrations-CAs, sister chromatid exchange-SCE, and micronucleus-MN assays in cultured human lymphocytes.

**Material and Methods:** Methidathion is one of the most widely used organophosphate insecticides (OPIs) in agriculture and public health programs. Triadimenol is a broad spectrum triazole systemic fungicide with protective, curative and eradicate action for the controlling of dusty mold and rusts in cereals. Lymphocytes were treated with four different concentrations of methidathion (3.75, 7.5, 15.00, and 30.00 µg/ml) and triadimenol (2.5, 5.0, 10.00, and 20 µg/ml). Treatment period was applied as 24 h and 48 h.

**Results:** Triadimenol has increased the percentage of abnormal cell in all the concentrations and treatment periods in a dose-dependent manner ( $r=0.91$  for 24 h,  $r=0.98$  for 48 h). Methidathion has also increased the percentage of aberrations in a dose-dependent manner at both treatment duration ( $r=0.95$  for 24 h,  $r=0.54$  for 48 h). The most common types of aberration were sister union, which is followed by dicentric chromosomes and chromatid breaks. MD and T pesticides increased the number of SCEs in a dose-dependent manner. Both pesticides have increased the frequency of MN. While MI significantly decreased, replication index (RI) and nuclear division index (NDI) was not affected by these pesticides.

**Conclusion:** Significant changes in CAs, SCEs, MN and MI in cells exposed to pesticides compared to control demonstrate the clastogenic, mutagenic and aneugenic effects as well as cytotoxic effects of MD and T pesticides in human lymphocytes in culture.

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**Keywords:** Environment, pesticides, methidathion, triadimenol, genotoxicity, lymphocyte.