International Journal of Applied and Natural Sciences (IJANS)
ISSN(P): 2319-4014; ISSN(E): 2319-4022
Vol. 3, Issue 2, Mar 2014, 89-96

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

GENOTOXIC BIOMONITORING AND EXPOSURE TO PESTICIDES IN WOMEN LABORERS AT MANEADERO VALLEY IN BAJA CALIFORNIA, MEXICO

TATIANA MONTAÑO-SOTO[1], EVARISTA ARELLANO-GARCÍA[2], LOURDES CAMARENA OJINAGA[3], CHRISTINE VONGLASCOE[4] & BALAM RUIZ-RUIZ[5]

[1]Graduate Student in Ecosystem Management, Autonomous University of Baja California, Baja California, Mexico

[2,3,5]Autonomous University of Baja California, Baja California, Mexico

[4]El Colegio de la Frontera Norte, Baja California, Mexico

ABSTRACT

Objective: Assess the effects to genetic material (DNA) caused by occupational exposure to pesticides in women from Maneadero Valley, an important agroindustrial region in Baja California, Mexico, using genotoxic bio monitoring. Methodology: 48 women signed their informed consent. Twenty-six placed in the exposed group and 22 in the control group. Socio-demographic information was collected by questionnaire and DNA damage was assessed using cytokinesis block micronuclei assay. The nuclear index and three biomarkers of damage were identified: micronuclei, nuclear buds and chromatin bridges. Cluster analysis was used to explore the relationship between variables and the Mann-Whitney U Test enabled the analysis of differences between the groups. Results: The Mann-Whitney U Test revealed that women exposed to agricultural chemicals have significantly greater frequencies of micronuclei ($p < 0.05$) compared to the control group. Nuclear index and chromatin bridges differences were not statistically significant. The cluster analysis showed a strong relationship between micronuclei and exposure. Discussion: These results suggest that genotoxicity is associated with occupational exposure to agrochemicals. Environmental exposure can be considered a modifying variable in the risk of genotoxicity from exposure to pesticides.

KEYWORDS: Genetic Damage, Genotoxicity, Micronuclei, Occupational Exposure, Pesticide, Women Farm Workers