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**ASSESSING THE GENOTOXIC RISK FOR MEXICAN CHILDREN WHO ARE IN  
RESIDENTIAL PROXIMITY TO AGRICULTURAL AREAS WITH INTENSE AERIAL  
PESTICIDE APPLICATIONS**

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### Abstract

Pesticide ambient exposure is a potential risk when children live in or near a field aerial sprayed with such chemicals as is the case in Sinaloa state in the northwest of Mexico. In this study the possible genotoxic risk assessment was evaluated in two groups: 125 children (52 females and 73 males) living in residential proximity to areas of intensive agriculture and exposed to agricultural activity of pesticide mixtures, in addition to 125 control youngsters (57 females and 68 males) living in the city of Los Mochis, Sinaloa. The risk assessment was done through the use of micronuclei (MN) in exfoliated buccal cells as biomarkers. The age range in both groups was 1 to 13 years. Microscopic analysis was performed in 3000 buccal epithelial cells for each sample. Significant increment of MN frequencies was observed when the odds ratios (OR) values were calculated (3.11 and 95 % CI 2.70 and 3.50), indicating high health risk to the exposed children. Other nuclear abnormalities associated to cytotoxicity or genotoxicity as binucleate cells, nuclear buds, karyorrhexis and karyolysis were detected; in all cases the differences were significant in relation with the control group. The MN assay in exfoliated cells was useful, and a minimally invasive method was followed for monitoring cytogenetic damage in the children who live in residential proximity to areas of intensive agriculture treated with large amounts of pesticide mixtures.

### Keywords

Micronuclei, exfoliated cells, child risk, pesticides, cytogenetic biomarkers.