

USE OF CITOKINESE BLOCKING MICRONUCLEUS TEST TO ASSESS GENOTOXIC EFFECTS IN PEST CONTROL AGENTS EXPOSED TO PESTICIDES IN RIO DE JANEIRO

*Thayná Oliveira dos Santos¹, Katia Soares da Poça¹, Ingrid da Silva Souza¹, Marcus Vinicius Corrêa dos Santos², Leandro Vargas Barreto de Carvalho²; Isabele Campos Costa-Amaral²; Ana Paula das Neves Silva² Priscila Jeronimo da Silva Rodrigues Vidal²; Ariane Leites Larentis², Marcia Sarpa de Campos Mello^{1,2}.

¹ Coordenação de prevenção e Vigilância do Câncer / INCA

² Centro de Estudos da Saúde do Trabalhador e Ecologia Humana / FIOCRUZ

In Brazil, some workers play a crucial role in public health strategies for the prevention and control of arboviruses, such as dengue, by the use insecticide, a class of pesticide. They are known as “pest control agent” (PCA). These workers also known as endemics guards, public health agents, or health agents. The activities performed by this group of professionals are highly diverse, and their performance poses risks to the workers' health. The objective of this study was to evaluate the health damages caused by the use of pesticides by pest control agent in the state of Rio de Janeiro. This is a cross-sectional epidemiological study involving 110 PCAs and 67 individuals without occupational exposure to insecticides / pesticides, aged 18 years or older, with at least 6 months of work experience. Blood samples from the participants were incubated in a culture medium containing phytohemagglutinin, and cytokinesis was blocked with cytochalasin B. After 72 hours of culture, the samples underwent hypotonic treatment and fixation. The slides were stained with DAPI solution for 10 minutes, and the presence of micronuclei, nuclear buds, and nucleoplasmic bridges was quantified using a semi-automated system, evaluating at least 3,000 cells per participant. The PCAs evaluated so far are predominantly men, with a median age of 56 years, self-identified as mixed-race or white. Some workers reported having received training in handling pesticides, but still considered it insufficient. The reported duration of work is approximately 29 years, with 26 years being the age at which they started working as PCAs. The main reported complaints were insomnia, irritation / nervousness, headache, and hand tremors. Partial results for these workers show an increased frequency of micronuclei ($p < 0.05$) and the presence of nuclear buds ($p < 0.05$), indicative, respectively, of clastogenic effects and increased gene expression. Even with partial results, the available data raise concerns for this class of workers and the need to expand knowledge about pesticide / insecticide exposure. This information can be used in occupational health surveillance actions, contributing to the increased safety of these workers in the occupational environment.

Keywords: Pesticide; Genotoxicity; Micronucleus.