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Pyrethroid exposure genotoxic, chronic effects and glutathione s-transferase (GSTM1, GSTT1) genetic polymorphism in vector control workersTirado N S¹, Hansen M R², Condarco Guido³, Barrón J¹, Paz R¹, Cuti M¹ and Quisberth S¹¹University Mayor of San Andrés, San Andrés²Aarhus University, Denmark³Plagbol Foundation, Bolivia

Pyrethroids is a class of insecticides in wide use globally. The acute effects of pyrethroid poisoning are well documented, but the possible chronic effects of low dose exposure are insufficiently described. The aim was to investigate the possible genetic damage, and the association between chronic low dose exposure to pyrethroids and diabetes or pre-diabetes. A cross-sectional study was performed among 122 exposed pesticide sprayers from public vector control programs in Bolivia and among 90 non-exposed controls. Pesticide exposure was determined by questionnaire. Blood samples were analyzed for comet assay, GSTM1, GSSTT1 polymorphisms and glycosylated hemoglobin A (HbA_{1c}), a measure of glucose regulation and bucal cells sample for micronucleus. The results of the genotoxic test showed no significant difference between exposed and controls, only in cariorexis analysis (p<0,007). The prevalence of pre-diabetes or diabetes was 61.1% among vector control workers and 7.9% among controls raw OR 18.4 [7.8; 43.6], adjusted OR 11.8 [4.2; 33.2]. A significant positive trend was observed between cumulated pesticide exposure (total number of hours sprayed) and odds of diabetes/pre-diabetes, but only for the vector control workers who had solely used pyrethroids. Caution is warranted when interpreting the results due to the possibility of residual confounding. A healthy worker effect could explain, why a dose-response relationship was only seen for the vector control workers that had only used pyrethroids? Pre-diabetes/diabetes was associated to chronic exposure to pyrethroids. Further study is warranted.

Biography

Tirado N S is a Professor of Biochemistry and Molecular Biology at Universidad Mayor de San Andres (UMSA), Head of Genotoxicology Unit at Genetic Institute, Medicine School, UMSA- La Paz, Bolivia. She is the Secretary of the Executive Committee of the Latin American Association of Environmental Mutagenesis, Teratogenesis, and Carcinogenesis (ALMCTA), President of the Bolivian Society of Muta Environmental Mutagenesis, Teratogenesis, and Carcinogenesis (SBOMCTA). She is the Coordinator of a grant regarding environmental toxicology studies (pesticide exposure), Swedish cooperation. She is the Author/Co-Author of 25 scientific papers, research papers, all of them concerning biomonitoring of people exposed to environment contaminants as heavy metals, pesticides, chemicals (¹³¹I, Formaldehyde) and radiations and conferences worldwide. She is the recipient of several national and international awards, Chairperson of The XIX International A. Hollaender Courses by the IAEMS-2015 and a Member of Organizing Committee of X ALAMCTA Congress 2016- Uruguay.

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