

6th International Conference on

Biomarkers & Clinical Research

August 31-September 02, 2015 Toronto, Canada

Sao Paulo workers exposed to air pollution: Evaluation of genotoxicity

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The goal of this study was to evaluate the genotoxic effects of air pollution (PM^{2.5}) on exposed individuals, from Sao Paulo City. The study involved 58 male workers of two different exposition groups: 1) 26 taxi drivers (TD) and 17 traffic controllers (TC), high exposure and 2) 15 workers from the Forest Institute (FI), low exposure. Each voluntary used a Personal Environmental Monitoring Sampler to collect PM^{2.5} particles mass. The sampler were operated continuously at 4-LPM over 24-hours. Particles were collected on a polycarbonate membrane filter (37 mm diameter). The frequency of Micronuclei (MN) in buccal exfoliated cells and peripheral blood lymphocytes were determined. The average the MN in lymphocytes and buccal exfoliated cells was significantly higher on group 1 (PM^{2.5} p < 0.001). There is a significant correlation between MN measured in exfoliated cells and in lymphocytes (correlation coefficient of 0.80; p<0.001). So the determination of MN buccal exfoliated cells is as efficient as the determination of MN in lymphocytes, a classic biomarker for the assessment of genotoxicity. Our results have shown that individuals exposed to the highest concentrations of PM^{2.5} have a higher level of micronucleus. However, we found in our study some individuals that even exposed to lower concentrations of pollutants, showed higher levels of micronuclei which allowed us to identify them as individuals more susceptible to PM^{2.5}. Thus, in order to understand this susceptibility, the methylation study of genes promoters related to inflammatory response, will be carried trough in these individuals.

Biography

Mônica Valeria Marquezini is a Scientific Researcher at Pro-Blood Foundation of Blood Center of São Paulo since 1991. She is a part of Experimental Air Pollution Laboratory - LPAE staff at the Department of Pathology, Medical School of University of São Paulo, Brazil, since 2010. She is an expert in Cellular and Molecular Biology with cell surface proteins studies and extracellular matrix research. She is a Teacher of Cell and Molecular Biology themes at different graduation careers, Post-graduation advisor, and Coordinator of specialization courses and National and International Projects. She holds a PhD in Science and from the Federal University of São Paulo-School of Medicine (1996) and graduated in Biological Sciences Medical Modality (1983).

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