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# The effects of heavy metals airborne exposure on mir-21 human peripheral lymphocytes, in Ecatepec, state of Mexico

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Urban air pollution threatens human health in Mexico, especially in the industrial zones near México City. The town of Ecatepec is Northeast the Metropolitan Zone of the Valley of Mexico (ZMVC). It is the fourth most industrialized town in the country. There are almost 1550 factories, mainly for iron processing, chemical manufacturing, furniture making, textile production and a thermoelectric plant, among others. The pollution produced from this factoriesin addition to the vehicular exhaust emissions is increased by the Orography of the ZMVC, which makes it difficult to disperse the pollutants and it also causes cycles of sedimentation-re-suspension. In this zone, there are high concentrations of Zn, Pb, and Cr.

These heavy metals (HM) can induce mutation and theycan modify the expression of genes without involving DNA sequence changes. Recent evidence suggests that some environmental factors cause changes in the regulation of the microRNAs which may increase the risk of disease (Lu et al. 2009; Sonkoly et al., 2011). MicroRNAs can regulate various physiological and pathological processes, such as cell growth, differentiation, proliferation, apoptosis, and metabolism. Some of them such as the miR-21 can be induced representing genome fragility. In the present study, we investigated the effect of HM PM10exposure on miR-21 measured in human peripheral blood lymphocytes that were exposed *in vitro* to different concentrations of airborne HM particulate matter from four different areas of Ecatepec. Results demonstrate a trend of miR-21 increase as the HM concentrations increase, suggesting that this microRNA could represent a molecular marker of genome fragility.

## Biography

Zelmy Castro was born at Mexico City on December 11, 1981. She studied the degree of Biology in Faculty of Sciences of Universidad Nacional Autónoma of México (UNAM). She worked two years in programs of Territorial Order and care programs of conservation land of Tlalpan city council. She was trained in Science popularization for a year at Direction General of Divulgation and Communication of Science, UNAM. At the present time, she is student of Master of Sciences Biologics in Center of Atmospheric Sciences, (UNAM) and her project of investigation is about damage of DNA by heavy metals of particulate matter (PM10) of industrial zone.

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