

CORRELATIONS OF DIFFERENT BIOLOGICAL EFFECTS INDUCED BY PM10 WITH THE CONCENTRATION OF ENDOTOXIN AND TRANSITIONAL METALS

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Exposure to PM10 has been related with increases in emergency room visits and mortality. The role of particle composition is not clear. The aim of the present study is to evaluate the correlation of biological effects with the concentration of some transitional metals (pmol/cm²) and endotoxin (pg/cm²) in PM10 from three different zones of Mexico City. The biologic effects evaluated were: cytotoxicity, necrosis, apoptosis, DNA damage (comet assay), TNF α , IL-6 and E-Selectin expression. Picomolar concentrations of transitional metals were calculated considering the concentration of each metal that was measured by plasma emission. The detected metals were: Cu, Ni, V, Zn, Fe and Pb. Endotoxin levels were measured by Limulus assay. A linear regression and correlation coefficient were calculated. Correlations for cytotoxicity were: Endotoxin 0.92; Cu 0.84; Fe 0.85; Ni 0.71; V 0.91; Zn 0.81 and Pb 0.88. TNF α secretion correlates with endotoxin 0.84; Fe 0.97; Ni 0.90; V 0.92; Pb 0.88 meanwhile IL-6 correlates with Fe 0.81; V 0.88; Pb 0.93. Apoptosis, necrosis and E-selectin expression presents poor correlations with components. DNA damage do not presents good correlations with any of the evaluated component ($r = 0.41 - 0.66$). Cytotoxicity is the effect that could be explained by the correlation with metal and endotoxin content, considering that $r > 0.80$ for all the evaluated components. Poor correlations with the evaluated components, suggest that some other components that has not been considering in this study, could be participating. Further studies are needed to validate this type of correlations.