

Endotoxins Concentrations and Fungi Occurrence in Microenvironmental and Personal PM2.5 Samples from Mexico City Metropolitan Area.

Rubén Marroquín¹, Tovalín Horacio^{2*}, Rodríguez Tracy¹, Pérez Dora¹.

¹Laboratorio de Microbiología e Inmunología, FES Zaragoza-UNAM, México ²División de Estudios de Posgrado, FES Zaragoza-UNAM, México.

*E-mail: horaciotovalin@yahoo.es

Abstract.

Objective.

This study results are product of the “Megacity Initiative Local and Global Research Observations-Mexico City Metropolitan Area-2006” campaign. Our purpose was to study endotoxins and fungi occurrence in PM2.5 particles collected at different microenvironments and from personal monitoring.

Methods.

PM2.5 particles were collected on 37mm Teflon filters with SKC pumps and samplers. Samples were obtained in MCMA at two urban sites: Iztapalapa, México City (T0), Tecamac, Mexico (T1) and one semi-rural site: San Pedro, Hidalgo (T2), and as control site, Santa Ana, Tlaxcala (TT) outside de MCMA. Samples were taken from outdoors and indoors at homes and schools and from personal monitoring.

Exdotoxins levels were measured using the Limulus Gel-clot procedure (determination of the coagulation end point), and occurrence of fungi colonies from the extracts were harvested and classified.

Results.

The higher levels of endotoxins were found at outdoors at TT (110.2 UE/mg). At indoors, the highest level was detected at T2, (67.5 UE/mg). From personal samples the highest concentration was observed at T0 (6.45 EU/mg). The highest number of fungi colonies was registered at T0 with 1225 CFU (colony forming unit isolated), (56.9% of the total filters), For outdoor samples the number of colonies were 625 (52.6%), for indoor samples 425 (34.7%), and for personal samples 175 (14.28%). The most commonly isolated genus was *Penicillium sp.*

Conclusions.

The observed levels of endotoxins in microenvironments were higher at the semi rural sites, while the personal exposure was higher at urban places. These endotoxins levels may be related with the development of respiratory symptoms in the exposed population.