

Titolo abstract: Multi-level approach for the study of air pollution impact on health

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Testo abstract (250 parole):

Diesel exhaust particles (DEP), a major component of traffic-related air pollution, are emerging as key factors to adverse health effects in terms of neuroinflammation and oxidative stress.

This study represents a model for multi-level investigations into environmental health risks, exploring the systemic impact of DEP exposure in healthy and disease-relevant mouse models, exploiting a physiological pollutant administration route (inExpose[®] system) and an in vivo molecular imaging combined with epigenomic analysis for the readout.

For this study, healthy male C57Bl/6 mice (n=10) were divided into saline (controls, n=2), low-dose (n=4, 1,5 mg/ml) and high-dose (n=4, 3 mg/ml) DEP exposure. The day after nose-only single-dose exposure of 15 minutes, all animals underwent whole-body PET/CT scans with [18F]FDG, as a marker of metabolism and inflammation, and were sacrificed thereafter for blood and organs collection for miRNA profiling with RT-PCR. Radiotracer uptake at the organ level was quantified as standardized uptake value (SUV_{mean}).

Mice exposed to DEP showed an increased FDG uptake in lung compared to the controls that would appear to be dose dependent. Transcriptomic analysis revealed upregulation of cerebral TGF- β after low-dose and high-dose DEP exposure. Alteration in microRNA profiling was observed in both brain and lung tissue, highlighting a role of miRNA involved in inflammatory pathways (inflamma-miR) in the response to DEP exposure.

Spoke di riferimento:

Spoke 6