

Design of a Unique Atmosphere-Mimicking Exposure Device for Investigating Oxidative Stress, Inflammatory and Cardio-metabolic effects of nanosized pollutants in rodents

Sylvia Pietri, Mathieu Cassien, Sophie Thétiot-Laurent, Etienne Quivet, Marcel Culcasi

▶ **To cite this version:**

Sylvia Pietri, Mathieu Cassien, Sophie Thétiot-Laurent, Etienne Quivet, Marcel Culcasi. Design of a Unique Atmosphere-Mimicking Exposure Device for Investigating Oxidative Stress, Inflammatory and Cardio-metabolic effects of nanosized pollutants in rodents. BIT's 8th Annual World Congress of Molecular and Cell Biology-2018, Oct 2018, Fukuoka, Japan. hal-03025735

HAL Id: hal-03025735
https://amu.hal.science/hal-03025735

Submitted on 26 Nov 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

BIT's 8th Annual World Congress of

Molecular & Cell Biology-2018

Time: October 16-18, 2018
Venue: Fukuoka, Japan
Website: http://www.bitcongress.com/cmcb2018/

Theme 411: Model Organisms and Disease Models

Title: Design of a Unique Atmosphere-Mimicking Exposure Device for Investigating Oxidative Stress, Inflammatory and Cardio-metabolic effects of nanosized pollutants in rodents

Dr. Sylvia Pietri*, Dr Mathieu Cassien, Dr Sophie Thétiot-Laurent, Dr Etienne Quivet and Dr Marcel Culcasi
Professor
Aix Marseille University, CNRS, Marseille
France

Abstract

Epidemiological studies have linked peak exposures of air pollutants to increased susceptibility to cardiovascular and pulmonary diseases and the effects on public health of acute intoxication with high levels of pesticides, carbon or metal derivatives found in air, soils and water are well documented. Yet there is a growing consensus that chronic exposure to lower levels of fine and/or ultrafine aerial particulate matter (PM) may cause impaired glucose regulation, endocrine disruption, hepatosteatosis and obesity. However the fact that ambient air particles may represent a new risk factor for insulin resistance and progression of diabetes mellitus remains difficult to quantitate due to the lack of reliable experimental models of controlled atmospheres allowing realistic PM inhalation. The presentation will cover the design of a new device for studying oxidative stress, inflammation, cardiac and metabolic dysfunction induced by sub-chronic and chronic inhalation of size-selected ultrafine particles aerosols in animals. Aerosols, controlled in size and concentration of particles, were prepared from several atmospheric relevant organic compounds and delivered up to 5 months (1-2 hours/day) to normal and transgenic rodents under non-stress conditions. The data evidenced that irreversible time-related cardio metabolic disorders and reduced insulin sensitivity were triggered by long-term aerosols inhalation in realistic situation.