

Second-hand tobacco smoke effects evaluated by proteomics

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Introduction and Objectives: Second-hand smoke (SHS) is responsible for more than 600000 premature year deaths. In the European Union, 14% of Non-Smokers (NS) are exposed to other individuals' tobacco smoke at home and 30% are exposed at the workplace. Towards their protection several European countries, except Portugal, move to a total tobacco ban in indoor public places. In 2008, a project aiming to analyze the impact of partial smoking ban in Portuguese public venues started. After our previously evidence of both SHS air contamination in non-smoking areas and inhalation of tobacco smoke by the venues workers, we aimed to study resultant biochemical and molecular changes at both systemic and respiratory level.

Methods: Ninety six workers participated in the study. A detailed lifestyle survey and clinical evaluation, which included spirometry were performed. 81 and 62 consented to provide blood and nasal epithelia (NE) cells, respectively. The obtained plasma samples were immunodepleted (14-MARS-affinity column, Agilent Technologies). Plasma and NE were analysed by 1D-SDSPAGE followed by in-gel digestion and LC-MS/MS.

Results and Discussion: At a clinical level all NS workers were considered healthy and recorded normal lung function as well as biochemical oxidative biomarker parameters. However at a molecular level a number of identified proteins were differentially expressed in those that are SHS exposed. Pathway Analysis is still in process.

Conclusions: Altogether these findings might contribute for disclosing early SHS induced pathogenic mechanisms and constitute a useful tool for monitoring the early effects of SHS on occupational exposed individuals, preventing the onset of related diseases.

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