

INFLUENCE OF AMBIENT AIR PM-BOUND POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) ON RESPIRATORY TRACT FUNCTION AND SYSTEMIC INFLAMMATION PARAMETERS IN HEALTHY ADULTS

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Objective: The aim of the study was to assess the effects of polycyclic aromatic hydrocarbons (PAHs) exposure on respiratory tract function and inflammation parameters in healthy people in heating and non-heating period.

Materials and Methods: 81 healthy people living at least 20 years in one of the heavily polluted town in the Warsaw (Poland) agglomeration, were examined. Each of them completed pulmonary function test in both seasons and serum cytokine profile (IL-1 β , IL-4, IL-5, IL-6, IL-8, IL-10, TNF- α) has been determined. Selected PAHs (acenaphthene, fenanthrene and benzo(a)pyrene) in the ambient and indoor air has been measured.

Results: Spirometric parameters in both periods met the standards, however higher values were observed in the summer period. Similarly PAHs concentration as well as serum cytokines concentration in the non-heating period were lower comparing to the winter period. Statistically significant ($p < 0.05$) correlation between FEV₁, FEV₁%, MEF₂₅, MEF₇₅, IL-4, IL-6 and PAHs concentration has been indicated. The highest correlation, especially with spirometric parameters, was noticed in case of acenaphthene and fenanthrene in the winter season (reaching the values of -0.99) and in case of acenaphthene in the summer period (reaching the values of -0.89).

Conclusion: The results of the study indicate that exposure to PAHs in the air may be associated with subclinical decrement, especially in small airway and may cause stimulation of systemic inflammatory processes by pro-inflammatory cytokines production.