

EVALUATION OF AIRWAY INFLAMMATION IN COMPOST WORKERS EXPOSED TO BIOAEROSOLS USING EXHALED BREATH CONDENSATE AND FRACTIONAL EXHALED NITRIC OXIDE

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Introduction: Respiratory diseases due to occupational exposure to bioaerosols were previously reported. We investigated the relationship between exposure to organic dust and levels of biomarkers in exhaled breath condensate (EBC) as well as fractional exhaled nitric oxide (FeNO) in 119 compost workers according to atopy and smoking habits.

Methods: Concentrations of 8-iso-prostaglandin $F_{2\alpha}$ (8-isoprostane), prostaglandin E_2 (PGE₂) leukotriene B_4 (LTB₄), tumor necrosis factor- α (TNF- α), and acid-base balance (pH) in EBC and FeNO were assessed in 59 never-smoking (NS) and 60 smoking (S) compost workers. Atopy was classified according to specific IgE concentrations to common inhalant allergens (sx1). Bioaerosol exposure was estimated according to job title, time daily worked under protection of filtered air supply and duration of employment.

Results: Atopic subjects were equally distributed among NS and S (n=16 each) with atopic smokers being younger (p=0.014) and serving less years (p=0.010). No associations could be revealed between exposure and biomarkers concerning compost workers in total but in atopic workers (duration of employment and FeNO: $r_s = 0.376$, p=0.041; filtered air supply and FeNO: $r_s = -0.335$, p=0.071). Smokers had significantly lower pH values compared to NS (non atopic, p=0.041; atopic p=0.050).

Conclusions: FeNO might be useful for monitoring of inflammation due to bioaerosol exposure, especially in atopic subjects. Besides smoking also atopy should be considered when investigating airway inflammation.