Dose-response relations for sensory effects caused by airborne office dust with added Glucan

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Introduction

This study investigated the dose response relations between dust spiked with Glucan and health effects in experimental settings. This presentation describes the results from the study related to individual symptoms, six symptoms indices and time course of general irritation in eyes, nose and throat.

Materials and Methods

A controlled experimental exposure of human subjects simulating a worse case scenario in the sense that the dust concentrations were in the higher range of what is normal for indoor air and the dust had been added a known biological active compound (Glucan) at concentrations known indoors. The study design was a cross over design (4x4 Latin) including clean air placebo exposures. Subjects were their own controls through baseline measurements in clean air each morning before exposures.

Results

The average exposure levels measured as personal exposures in $\mu g/m^3$ (SD, min, max) for the four exposure levels were 54 (52, 3, 255), 149 (59, 66, 356) 333 (104, 120, 504), and 646 (92, 486, 789) respectively for the four exposures.

Effects on symptoms indices were indicated but must be further analysed before conclusions can be made. Effects of dust exposures on time course of irritative symptoms are not indicated in the initial analyses. Among 29 symptoms eye irritation increased significantly, while indications of increased effects were found among atopic persons who reported increased need of more ventilation. More skin irritation was reported in both groups but in opposite directions. Analyses in mixed model of six indices based on the 29 symptoms showed increasing effect in some of the symptoms indices (WIR, EP, and PNE) but also in some of the environmental factors which were expected to be constant.

Conclusions

With some reservations it is concluded from the initial analyses that the intended exposures and exposure conditions were achieved and that the subjects' assignments to sensitivity and exposure groups were established in a way, which does not seem to harm the conclusiveness of the study. No major deviations from the initial design were made.

The preliminary statistical analyses indicate that the study with some reservation support that causality exists between symptoms and exposures to dust with added Glucan with focus on inflammatory responses.

Interpretation of these results awaits further statistical analyses.