

Tolerance to exposure to essential oils in patients with allergic asthma.

BACKGROUND:

Essential oils are volatile compounds of plant origin increasingly used by allergic and/or asthmatic subjects to purify indoor air. The active compounds of essential oils belong to terpenes, the most widespread biogenic volatile organic compounds (VOC). Although there is substantial literature showing associations between exposure to chemical VOCs and asthmatic symptoms and impaired respiratory function, the impact of essential oils in patients with asthma has never been studied.

OBJECTIVES:

To evaluate the safety of a purifying air spray containing 41 essential oils (PPAS) in patients with mild or moderate allergic asthma.

METHODS:

This was a prospective open study in which 25 mild (19) and moderate (6) asthmatics were exposed to PPAS, one spray twice a day at 8 am and 8 pm in two different corners of a given subjects bedroom for 4 weeks. Before and after 4 weeks of exposure, fractional exhaled nitric oxide (FeNO), lung function, and methacholine challenge (PD₂₀) were performed and asthma control was assessed by the 5 questions of the Asthma Control Test (ACT). The spray was weighed after the 4-week exposure to assess compliance.

RESULTS:

FeNO was the primary endpoint and was thus analyzed in all (N = 25) subjects irrespective of the level of airflow obstruction. The results apply to all (N = 25) subjects in which FeNO could be measured at D1 and D30 (17 subjects). Mean (SD) FeNO amounted to 37.4 (16.6) and to 33.1 (18.7) ppm

before and after PPAS exposure, respectively ($p = 0.09$). No significant change in lung function and methacholine responsiveness was noted after PPAS exposure, the mean PD_{20} amounting to 1179 (1124.42) μg (range 100-3200) before and to 1226 (1189.8) μg ($p = 0.06$) after. The mean ACT before and after PPAS exposure amounted to 20.9 (4.2) and 21 (5.15), respectively ($p = 0.80$). The mean weight of the PPAS bottles was 211.4 g (DS:0) before the first use and 171.41g (DS: 29.8) at the end of the study. The average amount of PPAS used was 40.0 gr (29.8). In the subgroup of subjects who used the highest quantities of essential oils (>40 gr), as assessed by the mean weight of the bottle at the end of the study, FeNO after 30 days of exposure decreased more than in the entire group: 7.9 ppm vs 4.2ppm ($p = 0.07$).

CONCLUSION:

No difference was noted on airway inflammation, lung function or asthma control in mild and moderate allergic asthmatics after exposure twice a day for one month, to a spray containing a mixture of 41 essential oils.