

Allergen avoidance in the homes of atopic asthmatic children: the effect of Allersearch DMS

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Summary

Allersearch DMS (an alcohol based purified benzyltannate complex) is an acaricide with allergen denaturing properties. The living rooms in the homes of 16 atopic asthmatic children were thoroughly cleaned and treated with Allersearch DMS and the effect on allergen concentrations in carpet and soft-furnishing dusts was determined. The skin-test reactivity of the children to their own dust, collected before and after treatment, was compared. In 13 of the 16 homes the concentration of major house dust mite allergen *Der p* I was reduced in the carpet dust after treatment ($P < 0.001$) and in 11 homes major cat allergen *Fel d* I was reduced ($P = 0.03$). Changes in allergen concentrations in soft-furnishing dusts were not significant. Control homes, which were cleaned but not treated, showed no significant difference in allergen concentrations. There were highly significant reductions in skin-test reactivity to both types of dust after treatment ($P < 0.004$, $P < 0.008$) suggesting an effect of the compound on allergens other than those individually monitored. The change in skin-test response to soft-furnishing correlated significantly ($P < 0.05$) with the number of individual sensitivities detected in each child. Controlled clinical trials of the effect of Allersearch DMS as part of an allergen avoidance study are now necessary.

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Introduction

Allergen avoidance can be a highly effective means of reducing clinical symptoms in allergic individuals with asthma, rhinitis and other related conditions [1,2]. However, the measures have to be extremely stringent to achieve an improvement. Admission to hospital [3] or institutions at high altitudes [1] where house dust mite and other allergens are scarce, or by completely altering the normal living environment of the family [2], have produced dramatic improvements in symptom and medication scores. We have found that exposure to allergens during the first few months of life is very important in sensitization [4,5]. Thus allergen avoidance during this period could be important by preventing the development

of allergic disease. However, a practical regimen which is compatible with normal family life would be required before this hypothesis could be tested.

Allersearch DMS (an alcohol based purified benzyltannate complex) has been shown not only to kill mites but to but to alter skin-test reactivity to dusts collected from materials containing mite allergen when they had been sprayed with this compound [6]. One study [7] has shown that it has a temporary effect in reducing house dust mite allergen in beds, carpets and furniture, but before employing Allersearch DMS in clinical trials, it is necessary to establish whether it has any effect on other allergen concentrations, specifically cat allergen which is the second most important domestic allergen source. We have examined the skin-test reactivity of 16 children to dust collected from the carpet and soft furnishings in their own living rooms before and after treatment with Allersearch DMS and have monitored its effect on directly measured house dust mite and cat allergen concentrations in the dust.

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did have a cat in the house during the period of this study were asked not to allow the cat into the living room for the 2-week period in between treatment of the room and re-sampling. As these four homes did not follow a uniform trend to increase or decrease dust *Fel d I* levels, it must be assumed that the success in restricting the cats was variable.

The cleaning procedure recommended before treatment of all allergen sources with Allersearch DMS was fairly rigorous and it was important to determine that any reduction in dust allergen content was not due to the cleaning alone. The five homes that were cleaned, but not sprayed, showed no significant difference in *Der p I* or *Fel d I* content in either the carpet or soft furnishing dust samples. The reproducibility of allergen concentrations in dust collected 2 weeks apart removed the need to increase the size of the control group to that of the active group, whereas if the concentrations had varied dramatically this would have been necessary. This would appear to have some implications when considering recommendations for increased cleaning measures, which obviously need to be frequent as well as thorough, in the homes of atopic individuals.

The change in skin-test responses, while correlating significantly with the change in *Der p I* and *Fel d I* allergen concentrations in the carpet dust after treatment with Allersearch DMS, did not correlate with the change in mixed soft-furnishing dust. This suggests an effect of the compound on allergens other than those individually monitored. Mixed soft-furnishing dust appeared to be a better representation of allergen load in a room than carpet dust, as the change in skin-test responses to this dust showed a significant correlation with the number of individual sensitivities detected in each child. This is not a surprising finding as most people vacuum their carpets more frequently than their chairs and sofas. This results in the removal of allergens from the carpets whilst the soft-furnishing dust retains a great variety of allergen sources (e.g. fungi) which accumulate over the time period when cleaning is not performed. These results underline the importance of careful planning in the assessment of the effect of allergen avoidance measures. Carpet dust is frequently used as an indicator of domestic allergen exposure. It is likely that the soft-furnishing dust contains greater quantities of allergen, which is less accessible to treatment, and therefore a more important source of inhalant allergen.

We did not carry out air sampling on occasions separate from the treating and sampling of dust as this would have necessitated two additional home visits for each patient. However, we did run the air samplers whilst the rooms were being cleaned and treated. Although there was a great disturbance of the dust at this time, which

would normally result in high airborne concentrations of *Der p I*, none or very little was detected, suggesting an immediate action of Allersearch DMS spray on the allergen as it was collected on the air filter.

The results of this investigation are encouraging and suggest that a controlled clinical trial of the effect of Allersearch DMS on atopic symptoms should be performed. This would involve monitoring the air and the dust for allergen concentrations over a longer period of time after repeated treatment, with assessment of clinical symptoms during the study period. If allergen reduction in the dust leads to lower airborne allergen concentrations and reduced symptoms, this approach could be considered as part of an allergen avoidance regime in the prevention of the development of allergy and asthma. However, it must be stated that such a treatment is unlikely to be successful in isolation and can only be an integral part of a much more complex avoidance schedule.

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