

Letter to the editor

Dust sampling for determination of allergen content

Mata et al. (2) recently published a letter to the editor of this journal discussing “standardization of house-dust sampling” for analysis of allergens in dust. We found the proposed instructions to be incomplete. The scientific value of trials would increase if a standardized procedure was used. Furthermore, data obtained in a trial can be used in clinical practice only if the same method is used in the trial and in clinical routine.

There are three important points which should be considered in connection with dust sampling: 1) the equipment used, 2) the time at which vacuuming is done, and 3) the area vacuumed and the time spent in vacuuming.

Until further experience has been gained, we propose that the following method be used.

Equipment

- If possible, the same vacuum cleaner should be used throughout a clinical trial. In multicenter trials, cleaners with similar construction and sucking capacity should be used in the different centers. They should preferably be equipped with a microfilter or high-efficiency particulate air filter (HEPA filter) at the out-blow and should have a protection device against overheating, because there is a risk of overheating if too much dust accumulates on the filter. Most standard machines with an 800–1200-W motor would be acceptable.
- A suitable filter holder and filter should be used. At present, the only well-documented equipment parts on the European market are the ALK filter holders and filters (Fig. 1).
- The retention capacity of the filter should be documented. The ALK filter retains 74% of particles 0.3–0.5 μm in size, 81% of particles 0.5–1.0 μm , 95% of particles 1–10 μm , and 100% of larger particles (1).

Procedure

- When sampling is repeated, it should be performed at the same time of the day and, when repeated yearly, at the same time of the year.

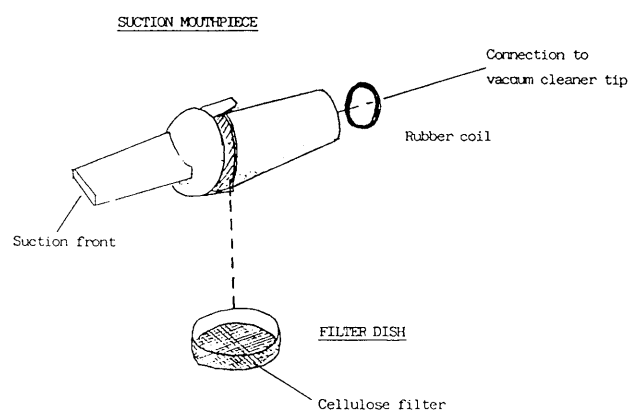


Fig. 1. Most commonly used dust-collection device (ALK, Denmark) containing various parts.

- Sampling should be performed at a defined time after the last cleaning, allowing enough material to settle.
- After vacuuming, the vacuum cleaner should be turned off with the filter-holder in a vertical position with the mouth facing up. The filter-box with filter is removed. It is stored in a plastic bag at -20°C until analyzed. If frozen for 2 days (to kill mites), it may be transported at $4-8^{\circ}\text{C}$. It should not be stored at room temperature for more than short periods of time.
- The filter holder can be cleaned with soap and tap water. It should be completely dry before being reused.

Collection sites

For routine purposes, dust from carpets or mattresses in the bedroom and/or carpet or upholstery in the living room should be collected (3).

The time spent vacuuming and the area vacuumed should be standardized as follows:

- *Soft surfaces*, e.g., mattresses and pillows, upholstered furniture, carpets, curtains, cushions, and cushion-like toys should be vacuumed for 2 min per m^2 , $\geq 4 \text{ m}^2$.
- *Hard surfaces*, e.g., uncarpeted floors, tables, uncovered chairs, and other plain surfaces should be vacuumed for 1 min per m^2 , $\geq 8 \text{ m}^2$.

A suitable area is one or two mattresses and pillows, i.e., 1.8–4 m².

It should be clearly stated whether or not vacuuming has been done on the sheets, the mattress cover, or directly on the mattress material.

Results

The results should be expressed in concentration of major allergens per gram of fine dust (after sieving, if necessary), which is an established measure of allergen load. In addition, it may be of value to express the allergen load as the amount of allergen per square meter or, better still, as the total per room (3).

References

1. JOHANSEN N, HEINIG JH, MOSBECH H. A new equipment for standardized dust sampling. XVII Nordic Congress of Allergology, Aarhus, 17–19 May 1990: 43.
2. MATA P, CHARPIN D, KAYTINDJIAN J, BIRNBAUM J, VERVLOET D. Standardization of house-dust sampling. *Allergy* 1994; 49: 134.
3. MUNIR AKM. Environmental factors influencing the levels of indoor allergens. *Pediatr Allergy Immunol* 1994; 5 (Suppl. 10): xx–x.

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