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Accepted for publication 7 August 2001
Allergy 2001; 56:1230–1231
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ISSN 0105-4538

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Microfiber fabric for blocking allergens

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Key words: breathable fabrics; cat allergen; house-dust mite; mite avoidance.

● SENSITIZATION and/or onset of asthmatic symptoms are closely related to the levels of indoor allergen exposure, whereas some allergen-avoidance measures have been shown to be effective in asthmatics and in the reduction of the rate of sensitization to HDM in children under 4 years of age (1, 2). This study was undertaken to evaluate the efficacy of a new microfiber fabric (Contralin[®], N.P.S.) as a barrier to indoor allergens. Thirty **Indoor allergens are reduced by using microfibres.** dust sources representative of four different situations were sampled with a dust-sampling device (DUSTSCREEN Dust-CollectorTM) according to a standard procedure. Sixteen sources were sampled again in a different

area protected with Contralin. Dust samples were weighed to assess the dust quality (μg allergen/g dust) and the total allergen exposure (μg allergen/surface vacuumed for a standard time). Der p 1, Der f 1, mite group 2, Fel d 1, and Bla g 2 concentrations were assessed with a commercial kit (DUSTSCREEN[®], CMG, ALK-Abellø).

Table 1 shows the results expressed as μg of allergen/g of dust sample from different sources. Easy chairs and mattresses showed the highest concentrations of HDM and cat allergen, whereas no sample showed detectable concentrations of Bla g 2. The use of Contralin led to a sharp and significant decrease of the concentration of Der p 1, Der f 1, and mite group 2 ($z=3.516$; $P=0.004$) and Fel d 1 ($z=3.3$; $P=0.0009$) (Wilcoxon matched-pairs signed rank test). Der f 1 levels were higher than Der p 1 levels ($z=P<0.05$), as already shown for northern Italy (3). Der p 1 and Der f 1 concentrations in 30 samples without Contralin showed a statistically significant correlation ($r=0.80$; $P<0.005$) (data not shown).

Our results confirmed the relevance of HDM and cat epidermic derivatives as indoor allergens, with the highest values for HDM in easy chairs and mattresses.

Table 1. Indoor allergen (Der p 1, Der f 1, mite group 2, Fel d 1) concentrations in samples of dust before and after use of microfiber fabric (m.f.). values are expressed as median and range in $\mu\text{g/g}$ dust

No. of samples	Source	Der p 1 ($\mu\text{g/g}$ dust)	Der f 1 ($\mu\text{g/g}$ dust)	Mite group 2 ($\mu\text{g/g}$ dust)	Fel d 1 ($\mu\text{g/g}$ dust)
18	Office chair without m.f.	0.41 (0–4.27)	0.77 (0–9.21)	0.04 (0–0.48)	0.260 (0–0.82)
4	Office chair with m.f.	0.00	0.00 (0–0.18)	0.00 (0–0.34)	0.000 (0–0.1)
4	Easy chair without m.f.	10.18 (1.13–18.6)	19.80 (1.25–21.36)	1.80 (0.13–2.86)	0.500 (0.08–0.66)
4	Easy chair with m.f.	0.50 (0–0.86)	1.00 (0–4.45)	0.10 (0–0.1)	0.010 (0.01–0.014)
3	Driver's seat without m.f.	2.30 (0.29–8.01)	0.90 (0.1–8.77)	0.30 (0.08–2.9)	0.500 (0.07–1.22)
3	Driver's seat with m.f.	0.30 (0–0.37)	0.20 (0–0.29)	0.01 (0–0.69)	0.007 (0–0.01)
5	Mattresses without m.f.	4.90 (2.1–7.8)	2.00 (1.3–18.7)	1.00 (0.16–1.65)	0.600 (0.2–0.9)
5	Mattresses with m.f.	0.00	0.30 (0.08–0.4)	0.00 (0–0.3)	0.020 (0.08–0.06)

Relevant concentrations were observed also outside the home, and mainly in the driver's seat. Our data do not support other findings about the relevance of cockroach (4, 5). According to our results, the microfiber fabric was able to block the majority of the allergens detected during the test. Because results are expressed as μg of allergen/g dust, the use of the microfiber fabrics specifically reduced the amount of allergens in the dust sampled, and this result was not due merely to a reduction of the amount of dust released into the environment. Vinyl covers are commonly used to encase pillows and mattresses, but because they are impermeable to air, they are often uncomfortable. These preventive measures cannot be applied to easy chairs, office chairs, and driver's seats. However, a microfiber fabric with adequate technical features, like that used by us, is comfortable, because of its permeability to air (10.8 ± 0.1 l/min, mean permeability 90.6 ± 1.0 mm/s), and is also an effective barrier to cat and HDM allergens.

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Accepted for publication 6 August 2001
Allergy 2001; 56:1231–1232
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ISSN 0105-4538

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Pollens in Parma 1995 to 2000

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Key words: aerobiology; airborne pollen; northern Italy; trend.

● IN Italy, aerobiologic monitoring has been extended to all types of pollens, and in this way new aeroallergens have been taken into consideration, as well as pollens previously considered minor or underestimated.

We report a study on the airborne pollen grains of increasing importance in the last 6 years in Parma (180 000 inhabitants, 100 km from the Tyrrhenian coast and 200 km from the Adriatic coast at 52 m above sea

The increase seems to be "man-made".

level). Air samples were analyzed in accordance with the Italian Aerobiology Association methods. The seasonal totals, pollen count mean/period, and start, end, and duration of season pollination trends were calculated (1, 2). The start and end of the pollen season were defined as the period when 2.5% of the total pollen census for each family pollen in the years was trapped (Fig. 1).

- 1) Corylaceae have shown a mean concentration and total pollen count increase trend.
- 2) Cupressaceae have shown an increased trend of the mean concentration and total pollen related to the delayed start and advanced end with reduction of the pollination period.
- 3) Oleaceae have shown an anticipation of pollination start and increase of pollination duration.
- 4) Aceraceae, Platanaceae, and Salicaceae have shown an increased trend of mean concentration and totals; Aceraceae and Platanaceae have shown a delayed pollination period, and Salicaceae have shown anticipation of the pollination period.
- 5) Corylaceae, Graminae, and Urticaceae anticipate the start and/or end of pollination period related to reduction of pollination duration.
- 6) Urticaceae have shown an increased trend of total and mean concentration pollens.
- 7) *Ambrosia* data have shown, apparently, slight positive modifications.
- 8) Meteorological data have shown a slight trend of variation on mean weekly temperature ($+0.1$ °C) and of rainfall ($+0.2$ mm).

The intensified volumetric observation of airborne pollen presence in Italy has led to a better documentation of the pollination periods of the most important allergenic plants.

In Parma, it is of relevance to consider the data about *Ambrosia* in relationship to its importance in allergology. This pollen was not trapped at the beginning of our observation. But its positive trend of the last years requires much more attention to the presence of *Ambrosia* pollen in Parma. At the moment, *Ambrosia* pollen could