

## Letter to the Editor

**Child-care center sandpits: A source of cat allergen (Fel d 1)**

*To the Editor:*

The major cat allergen, Fel d 1, is distributed ubiquitously in the environment. Although most exposures of interest are in the home environment, it is also recognized that child-care centers are an important source of exposure to Fel d 1. For example, in a recent study in North Carolina, detectable levels of Fel d 1 were commonly found in indoor areas of children's day-care facilities.<sup>1</sup>

A feature of many child-care centers is a sandpit for young children to play in. We hypothesized that sandpits are a source of Fel d 1, either through transfer of Fel d 1 from children's clothing, a known source of Fel d 1,<sup>2</sup> or from cats straying inadvertently into sandpits. Thus, we determined the Fel d 1 content of sand from sandpits in child-care centers in Wellington, New Zealand.

A random sand sample was obtained from sandpits from 18 kindergartens and 18 day-care centers. Portions of the sand samples, 100 mg, were extracted at room temperature with PBS and the Fel d 1 levels determined in the supernatant by double mAb ELISA (Indoor Biotechnologies, Cardiff, United Kingdom). Because of non-normal distribution, results are expressed as geometric mean  $\mu\text{g}$  Fel d 1/g sand.

Twelve out of the 36 sand samples had measurable Fel d 1 levels ranging from 3.18  $\mu\text{g/g}$  to 10.76  $\mu\text{g/g}$ . Sand samples with undetectable Fel d 1 levels were assigned a value of 0.1  $\mu\text{g/g}$  to calculate the geometric mean Fel d 1 level of all the sandpit samples, which was 0.39  $\mu\text{g/g}$ . Table I shows results of the 12 sand samples with detectable Fel d 1 levels.

This study has shown that some child-care center sandpits are a source of Fel d 1, which could be of importance to children with cat allergy. Four of the sandpits had Fel d 1 levels greater than 8  $\mu\text{g/g}$ , a level suggested to cause symptoms in individuals with cat allergy.<sup>3</sup> A limitation of our study is that we sampled only a small portion of the sandpits, and it may be that there is a wide variation of Fel d 1 levels throughout the entire sandpit.

The detectable amounts of Fel d 1 in some of the sandpits most likely come through either passive transfer of Fel d 1 from children's clothing or from cats straying into the sandpits. Regarding the latter, all the child-care centers in Wellington have a policy of discouraging cats from sandpits, and they are covered when not in use. However, it may be that at times, covering of sandpits may have been overlooked, because some of the sandpits had high levels of Fel d 1, suggesting cats as the source.

Apart from the indoor environment, Fel d 1 has also been detected in permanently cat-free areas such as the

**TABLE I.** Fel d 1 concentrations of sandpits with detectable levels

| Sand sample no. | Fel d 1 $\mu\text{g/g}$ |
|-----------------|-------------------------|
| 1               | 3.18                    |
| 2               | 3.63                    |
| 3               | 3.93                    |
| 4               | 4.25                    |
| 5               | 5.22                    |
| 6               | 5.26                    |
| 7               | 5.37                    |
| 8               | 6.96                    |
| 9               | 8.06                    |
| 10              | 8.07                    |
| 11              | 8.31                    |
| 12              | 10.76                   |

Antarctic,<sup>4</sup> where it is thought to have been dispersed from clothing. Fel d 1 has even been detected in human hair,<sup>5</sup> airplanes,<sup>6</sup> and automobiles.<sup>7</sup> To those potential exposure sources we can now add sandpits from child-care centers. This may be of relevance for cat-sensitized children.

Rob Siebers, FNZIMLS, FNZIC  
Karen Oldfield, BMLSc  
Julian Crane, FRACP

From the Wellington Asthma Research Group, Wellington School of Medicine and Health Sciences, Wellington, New Zealand.

Disclosure of potential conflict of interest: The authors have declared that they have no conflict of interest.

## REFERENCES

- Arbes SJ, Sever M, Mehta J, Collette N, Thomas B, Zeldin DC. Exposure to indoor allergens in day-care facilities: results from 2 North Carolina counties. *J Allergy Clin Immunol* 2005;116:133-9.
- Patchett K, Lewis S, Crane J, Fitzharris P. Cat allergen (Fel d 1) levels on school children's clothing and in primary school classrooms in Wellington, New Zealand. *J Allergy Clin Immunol* 1997;100:755-9.
- Platts-Mills TA, Vervloet D, Thomas WR, Aalberse RC, Chapman MD. Indoor allergens and asthma: report of the Third International Workshop. *J Allergy Clin Immunol* 1997;100:S2-24.
- Siebers R, Weinstein P, Fitzharris P, Crane J. House-dust mite and cat allergens in the Antarctic. *Lancet* 1942;1999:353.
- Liccardi G, Barber D, Russo M, D'Amato M, D'Amato G. Human hair: an unexpected source of cat allergen exposure. *Int Arch Allergy Immunol* 2005;137:141-4.
- Martin IR, Wickens K, Patchett K, Kent R, Fitzharris P, Siebers R, et al. Cat allergen levels in public places in New Zealand. *N Z Med J* 1998;111:356-8.
- Neal JS, Arlian LG, Morgan MS. Relationship among house-dust mites, Der 1, Fel d 1, and Can f 1 on clothing and automobile seats with respect to densities in houses. *Ann Allergy Asthma Immunol* 2002;88:410-5.

doi:10.1016/j.jaci.2006.04.026