

Letter to the Editor

Duration of airborne Fel d 1 reduction after cat washing

To the Editor:

Allergic rhinitis and asthma triggered by pet exposure are a commonly encountered clinical problem. Allergic sensitization to cat or dog dander has been found in 22% to 67% of patients with asthma.¹

Allergic sensitization to Fel d 1, the major cat allergen, is present in more than 90% of patients with cat allergy.² Levels of Fel d 1 sufficient to promote sensitization and provoke symptoms are often encountered even in homes without cats.³

Because pet owners often develop emotional attachment to their pets, alternatives to animal removal from the home have been studied. We were previously unable to demonstrate efficacy of several proposed allergen reduction methods.⁴ A subsequent report has suggested a reduction in recoverable Fel d 1 by a washing technique involving cat immersion.⁵ In this study, we analyze the duration of Fel d 1 reduction using an immersion technique.

Twelve adult female American domestic short-hair and medium-hair cats were washed by the immersion technique described by Avner et al.⁵ Briefly, cats were immersed in tap water to the level of their heads, and pelts were massaged for 3 minutes. This was followed by a 3-minute immersion in fresh water. Cats were then towel-dried and returned to their cages. The cats were treated and maintained in accordance with applicable animal care standards.

Fel d 1 collection was performed by placing cats in a 61 cm × 46 cm × 30 cm chamber with air samples collected for 30 minutes at a flow rate of 200 L/min onto a microporous filter mounted at one end of the chamber. A perforated Plexiglas shield (Altuglas International, Philadelphia, Pa) was placed between the cat and the filter to prevent direct contact. Chambers were thoroughly cleaned between collections.

All Fel d 1 assays were performed by a blinded investigator using a 2-site monoclonal immunoassay. Results were recorded as milliunits (1 mU = 4 ng) of Fel d 1 per 30 minute air sample. Prewash baseline Fel d 1 measurements were obtained daily for 1 week. Postwash measurements were then taken 3 hours after washing and daily for 1 week thereafter.

A natural log transformation was used for the analysis because of the variability of the Fel d 1 measurements. Mean values for all 12 cats are reported for each day of the study. In addition, the mean of 7 prewash days was determined to establish an average baseline value. This average value was compared to each of the postwash days using paired *t* tests.

Individual measurements varied significantly (<1.0–16,000 mU/30 min collection). Mean daily natural log Fel d 1 values are shown in Fig 1. Eight control measurements with empty sampling chambers were performed throughout the study to assess adequate cleaning methods between cat samples. The average of the prewash measurements

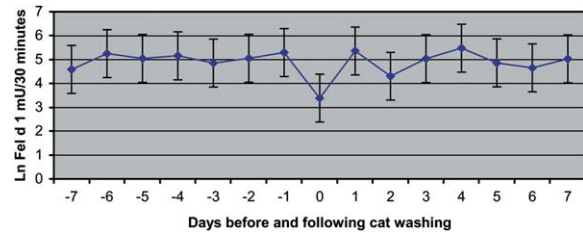


FIG 1. The averages of the Fel d 1 air sample collections for all 12 cats are depicted for each day of the study. The mean of the prewash days was compared with each day after washing the cat. Sampling for Fel d 1 three hours after washing (day 0) was lower than the mean prewash value ($P = .0062$). The remaining postwash values were not significantly different from the mean value.

(153.24 mU Fel d 1/30 min) was compared to each of the postwash measurements (3 hours and daily for 7 days). Only the 3-hour postwash measurement showed a significant reduction (29.54 mU Fel d 1; $P = .0062$). By 24 hours, Fel d 1 measurements were indistinguishable from baseline (212.09 mU Fel d 1; $P = .4542$).

Brief immersion of cats in water did result in a 4-fold to 5-fold decrease in Fel d 1 collection at 3 hours, with a return to baseline within 1 day after the washing.

Female cats were used in this study, because these are common household pets. However, Fel d 1 production in male animals is higher, and evaluation of immersion on uncastrated male cats may yield a different result.⁶

Our data confirm that significant reductions in Fel d 1 can be obtained by cat immersion. However, these reductions appear short-lived. Therefore, it is unlikely that the average cat owner will experience meaningful improvement in allergic symptoms with this environmental control method. Variability of Fel d 1 sampling between different cats on the same day, and within the same cat on different days, was observed in our study and reported by others.⁶ However, it appears that some cats were consistently high producers of Fel d 1. This may be a partial explanation for patients' claims of becoming symptomatic only when exposed to certain animals.

It is clear that many cat owners form strong emotional bonds with their pets and will continue to seek alternatives to pet removal, even if unproven. However, our study reinforces the lack of efficacy of washing cats as a means of reducing allergen exposure. In addition, keeping a cat out of a patient's bedroom appears to provide little benefit in reducing the Fel d 1 concentration throughout the home.⁷ In our study, only a single intervention was analyzed. Multifaceted environment manipulation may be effective for allergens such as cockroach.⁸ To our knowledge, studies involving multiple intervention approaches for cat allergy have not been published. However, removing upholstered furniture from the home after removal of the cat facilitates a more rapid decline in Fel d 1 levels.⁹ Currently, the only proven method of reducing exposure involves removing the animal from the home.

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Disclosure of potential conflict of interest: C. Nageotte is on the speaker's bureau for GlaxoSmithKline, Genentech, and Novartis. M. Park is on the speakers' bureau for GlaxoSmithKline. The rest of the authors have declared that they have no conflict of interest.

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doi:10.1016/j.jaci.2006.04.049