

Fel d 1 levels in domestic living rooms are not related to cat color or hair length

To the editor

The cat allergen Fel d 1 is the most common domestic animal allergen associated with asthma in New Zealand, where >50% of households report owning a cat.¹ Fel d 1, which is predominantly produced from sebaceous glands, is deposited on fur; from there it is dispersed.

Recently, Hussain et al² reported in a meeting abstract that severity of allergic symptoms in patients with allergic rhinitis was related to cat fur color, patients with dark-colored cats reporting more symptoms than patients with light-colored cats. One possible explanation for this finding is that cat fur color affects Fel d 1 production. However, no Fel d 1 levels were measured in the study.

Most studies of the relationship between Fel d 1 and sensitization or disease symptoms have studied Fel d 1 concentration in reservoir dust. The aim of the present study was to determine whether cat fur color, sex, or length of fur affected Fel d 1 levels in reservoir dust from domestic living rooms.

As part of an ongoing study of indoor allergens in the infant environment, dust samples were collected from living rooms, as previously described.³ People with children were interviewed by telephone with respect to the following: ownership of 1 or more cats; sex of the cat; color(s) of the cat's fur; and length (long, medium, or short) of the fur hairs. They were also asked whether the cat ever entered the living room.

Dust samples were sieved, extracted (100 mg in phosphate-buffered saline solution containing Tween-20 for 30 minutes at room temperature), and analyzed for Fel d 1 by double monoclonal antibody ELISA.⁴ Results are presented as geometric means with 95% CIs. Comparison of Fel d 1 levels between groups was by means of a Student *t* test; a *P* value of less than .05 was deemed significant. The Central Regional Ethics Committee approved the study.

Results are presented from households in which (1) there was only 1 resident cat and (2) the cat was regularly allowed into the living room. A total of 42 households met these criteria. Each cat in the study had been castrated or spayed. Table I shows no significant differences in Fel d 1 levels from living room floors on the basis of sex of the cat, length of the cat's fur, or principal color (>50%) of the fur.

Table I. Cat color, sex, fur length, and geometric mean Fel d 1 levels (95% CI) on living room floors of subjects with cats in which cats were allowed in the home (n = 42)

	Fel d 1: $\mu\text{g/g}$	Fel d 1: $\mu\text{g/m}^2$
Fur color		
Black (n = 15)	50.9 (20.6-125.6)	46.2 (15.0-141.5)
Ginger (n = 8)	44.2 (4.1-471.4)	21.8 (1.2-411.5)
Gray (n = 9)	63.6 (28.2-143.4)	36.7 (14.5-92.6)
Mixed/other (n = 10)	41.9 (15.4-114.1)	29.6 (6.9-128.0)
Sex		
Female (n = 28)	50.5 (28.8-88.6)	44.7 (22.5-88.9)
Male (n = 14)	47.9 (13.3-172.9)	20.1 (3.9-104.2)
Fur length		
Short (n = 24)	72.8 (45.6-116.3)	61.1 (33.9-110.4)
Medium (n = 5)	13.3 (0.2-1220.0)	6.8 (0.3-1475.0)
Long (n = 13)	40.5 (16.3-100.0)	22.0 (6.2-77.5)

Hussain et al found that in patients with allergic rhinitis, the odds of moderately severe symptoms in reaction to cat were approximately 6-fold higher when the exposure was to dark-colored cats than when the exposure was to light-colored cats and that this was irrespective of the sex of the cat. Although it remains possible that dark-colored cats produce more Fel d 1 than light-colored cats, our study suggests that cat color has no effect on reservoir dust Fel d 1 levels. The exact meaning of *light* and *dark* with regard to cat color is not clear in the report by Hussain et al; therefore, each of the cats in our study was classified as predominantly black, predominantly ginger, predominantly gray, or mixed/other, these being the common cat colors in our geographic location. We were unable to determine the effect of cat breed on Fel d 1 levels, inasmuch as 20 of the cats in our study were of mixed breed and 11 others were of unknown breed.

Ramadour et al⁵ studied Fel d 1 levels in fur extracts and found that female cats, whether spayed or not, produced fur Fel d 1 levels similar to those associated with castrated male cats; in contrast noncastrated male cats produced 4- to 5-fold higher levels of Fel d 1. We found that the sex of the cat did not influence living room dust Fel d 1 levels. All cats in our study had been neutered; thus it was not possible to examine Fel d 1 levels associated with noncastrated male cats.

Fel d 1 in the domestic environment induces symptoms in cat-sensitized patients with allergic rhinitis and asthma. Our study, showing no effect of cat fur color on reservoir dust Fel d 1 levels, does not provide an explanation for the findings of Hussain et al; the mechanisms responsible for those findings remain to be elucidated.

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TOP

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