

## Analysis of sensitization profiles in allergy patients focused on animal allergen molecules

Allergy Diagnosis / Molecular allergology

Vachová M.<sup>1</sup>, Vlas T.<sup>1</sup>, Malý M.<sup>2</sup>, Panzner P.<sup>1</sup>

1. Department of Immunology and Allergology, Faculty of Medicine in Pilsen, Charles University, Pilsen, Czech Republic
2. The National Institute of Public Health, Prague, Czech Republic

### Background

The increasing presence of animals in households, associated with the presence of their allergens in places where no animals are present (schools etc.), has contributed to an increase of pet allergy. Frequently observed co-sensitization to more animal diagnostic extracts highlights the importance of molecular diagnosis revealing sensitization to species-specific and cross-reacting allergens. The aim of our study was to assess the usefulness of molecular diagnosis in the description of sensitization profiles in allergy patients focused on animal allergen molecules.

### Method

We studied sensitization profiles of allergy patients living in the western part of the Czech Republic. The molecular diagnosis was performed by means of the ImmunoCAP ISAC microarray. 1255 patients sensitized to at least one allergen component were subjected to detailed statistical analysis. We focused on animal-derived allergen molecules presented in ISAC: Fel d 1, Fel d 2, Fel d 4 for cat; Can f 1, Can f 2, Can f 3, Can f 5 for dog; Equ c 1, Equ c 3 for horse; Mus m 1 for mouse and Bos d 6 for cow.

### Results

The sensitization rates for cat allergens Fel d 1, Fel d 2 and Fel d 4 were 31.8%, 3.2% and 5.3%. The most frequently was observed monosensitization to Fel d 1, followed by co-sensitization of Fel d 1 with Fel d 4 and Fel d 1 with Fel d 2. Monosensitization to Fel d 4 and Fel d 2 was rare. The sensitization rates for dog allergens Can f 1, Can f 2, Can f 3 and Can f 5 were 13.9%, 4.2%, 2.9% and 16.4%. The most often was monosensitization to Can f 1 and Can f 5, followed by co-sensitization of Can f 1 with Can f 2, Can f 1 with Can f 5, Can f 1 with Can f 3 etc. Monosensitization to Can f 2 and Can f 3 was rare. The sensitization rates to other available animal allergens Equ c 1, Equ c 3, Mus m 1 and Bos d 6 were 6.2%, 1.5%, 4.1% and 1.3%. Detailed analysis of sensitization profiles to lipocalins (Can f 1, Can f 2, Fel d 4, Equ c 1, Mus m 1) and albumins (Can f 3, Fel d 2, Equ c 3, Bos d 6) confirmed high rate of co-sensitization within both groups.

### Conclusion

Species-specific cat uteroglobin Fel d1 and dog kallikrein Can f 5 are the most frequently observed animal allergens in our group. Less frequent, but common is sensitization to cross-reactive lipocalins, sensitization to cross-reactive albumins is very low. Commonly observed co-sensitization to more animal diagnostic extracts (cat, dog, horse, mouse) can be mainly explained by sensitization to cross-reactive lipocalins.

