

R. Wagner, B. Hunsinger, S. Gerber, M. Galian, E. Müller  
Steubenstraße 4, 97688, Bad Kissingen (Alemania), Tel.: 0049/ 971 - 7202-0, info@laboklin.de

### Study objectives

Hypersensitivity reactions, especially type 1 are the most potent defense mechanisms of the immune system. Sensitization against allergens leads to increased production of allergen-specific IgE antibodies. The Fc-domain of these antibodies attaches to the alpha chain of the Fcε-receptor located on the surface of mast cells (and basophilic granulocytes)<sup>1</sup>. The Fab2 domain remains empty. During a repeated exposure, the allergen binds to several IgE antibodies located on mast cells, which leads to the formation of “bridges“ between neighbouring mast cells with degranulation and release of inflammatory mediators causing symptoms<sup>1</sup>. The Fcε-receptor-test (Allercept®) detects allergen-specific IgE antibodies in serum samples of dogs and cats allowing the development of allergen-specific immunotherapies. The main advantage of this test is its high specificity (92%)<sup>2</sup>. It only detects IgE antibodies and does not react with IgGs or other immunoglobulins.

Therefore, only animals with allergen induced IgE antibodies are tested positive and the likelihood of false positive results is very small. The test is also very sensitive (86%) and so it is detecting 86% of the allergic patients<sup>2</sup>. Fcε-Receptor Test is used in patients with atopic dermatitis and feline asthma. In allergic asthma, allergens are inhaled through the respiratory tract and induce local Th2 immunity driving IgE production. Serum IgE-determination by the FcεR1a-based ELISA for the selection of allergen-specific immunotherapy would likely be effective<sup>3</sup>. Allergen-specific immunotherapy (ASIT, hyposensitization) is the most successful treatment for human patients suffering from allergies. ASIT has a direct effect on the pathophysiology of allergy, leading to a switch from a Th2- to a Th1 immune response<sup>4</sup>. The result is a long lasting decrease of the clinical signs typically associated with allergies.

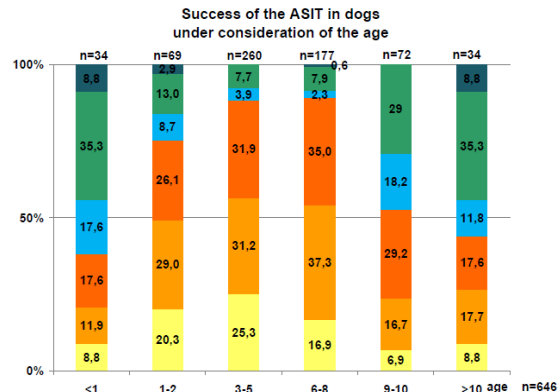
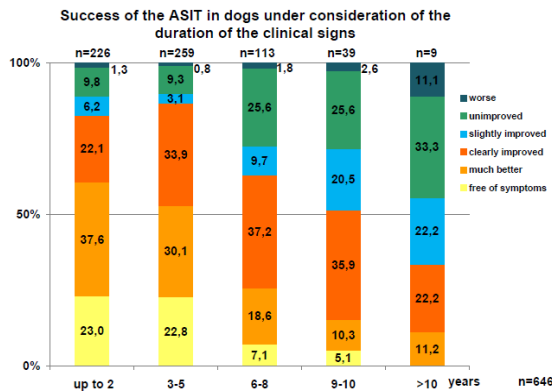
### Material and Method

Questionnaires were submitted to the Veterinarians using ASIT in their patients for minimum of 6 months. Questions were asked in regard of signalement, duration of clinical signs, age of start of therapy, and how fast results of success were seen. The overall success rate was calculated.

### Results

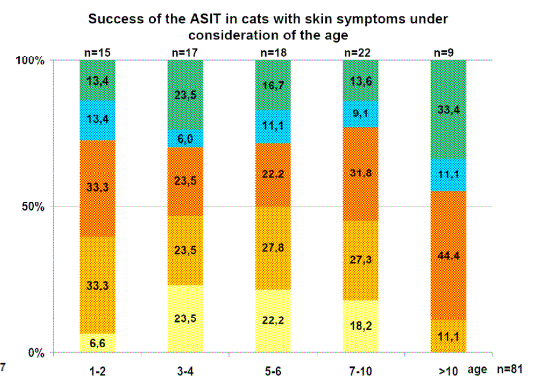
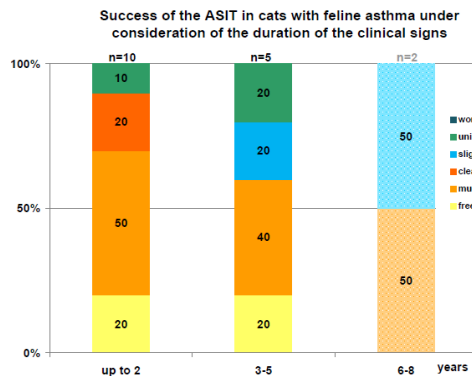
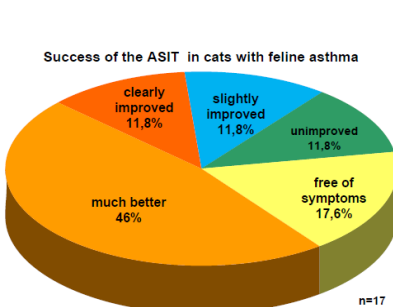
Questionnaires of 98 cats and 646 dogs were submitted.

In 78,3% of the dogs the overall success of the ASIT ranged from clearly better to free of symptoms, and 15% failed to demonstrate any improvement. More than 80% of the patients which had exhibited clinical signs for less than six years before starting an ASIT improved. Only one third of animals under one year of age improved with the ASIT. 33% of dogs over ten years of age at the start of the ASIT showed no improvement.



17 cats were treated with the ASIT due to feline asthma. In 75,6% the overall success ranged from clearly better to free of symptoms, and 11,8% failed to demonstrate any improvement. 90% of the patients which suffered from feline asthma for less than two years and 60% of those who had asthma since 3-5 years before starting the ASIT improved.

81 cats were treated with the ASIT due to skin symptoms. In 81% the overall success ranged from clearly better to free of symptoms. 80% of the patients which showed clinical signs for less than two years and 65% of those who had skin symptoms since 3-5 years before starting ASIT improved. The success was less age depending. More than 70% of cats between 1-10 years of age improved, but only 55% of the cats which were older than 10 years when starting the ASIT improved.



Approximately 30% of the patients showed noticeable clinical improvement during the first two months of therapy. The ASIT was successful within the first 6 months of therapy in 50% of the patients. 20% of the treated animals needed 10-12 months to show a noticeable success. The number of allergens used in the ASIT (1 to 8 allergens) did not influence the outcome significantly.

### Conclusions

The outcome of this therapy is better the shorter the duration of clinical symptoms is prior to hyposensitisation. The best results in dogs and cats were seen in middle aged animals, with a short history of onset. Animals younger than 1 year and older than 10 years show a decreased success rate. When high numbers of allergens (>10) were included in the ASIT, the rate of success was lower. Overall the ASIT is a very successful therapy for allergic dogs and cats.

### Bibliography

<sup>1</sup> Bloebaum RM, Dharajaya N, Grant JA: Mechanisms of IgE-mediated allergic reactions. Clin Allergy Immunol. 2004; 18: 65-84. <sup>2</sup> Wassom DL, Grieve R. In vitro measurement of canine and feline IgE: a review of FcEpsilon-R1-alpha-based assays for detection of allergen-reactive IgE. Vet Dermatol 1998; 9(3): 173. <sup>3</sup> Lee-Fowler TM, Cohn LA, DeClue AE, Spinka CM, Elebracht RD, Reinero CR: Comparison of intradermal skin testing (IDST) and serum allergen-specific IgE determination in an experimental model of feline asthma. Vet Immunol Immunopathol 132 (2009) 46-52 <sup>4</sup> Shida M, Kadoya M, Park SJ, Nishifuji K, Momoi Y, Iwasaki T. Allergen-specific immunotherapy induces Th1 shift in dogs with atopic dermatitis. Vet Immunol Immunopathol. 2004; 102(1-2):19-31.