BACKGROUND

The chemical modification of allergens to allergoids allows higher immunotherapy doses to be safely administered over a short period of time compared with traditional allergen based protocols [Subiza J, et al. Allergy 2010; 65 (S92):564]. A simpler induction protocol allows for improved immunotherapy compliance. Allergoids have been successfully used to treat human allergy from more than 30 years. [Grammer LC, et al. J Allergy Clin Immunol 1986; 78 (1180-1184)]

Figure 1. By glutaraldehyde treatment of native allergenic extracts (A) high molecular weight polymers named Allergoids are obtained (B). [Patterson R, et al. J Allergy Clin Immunol 1977; 59(4):314-9]

Figure 2. They have reduced allergenicity. A polymer comprising multiple allergens has a smaller surface area than the same number of allergen monomers, with fewer exposed epitopes which are able to cross-link mast cell bound IgE. [Patterson R, et al. J Allergy Clin Immunol 1979; 63(1):47-50.]

Figure 3. Also they maintain (or have increased) immunogenicity compared to native allergens. The use of polymerised allergens provides a safe mechanism to quickly deliver the high concentrations of allergen required to initiate immune modification. [Subiza J, et al. Clin Exp Allergy 2008; 38(6):987-994.]

MAIN OBJECTIVE

Assess field safety and efficacy of allergen specific immunotherapy in dogs with CAD using allergoids with a cluster administration scheme.

MATERIALS AND METHODS

Fifty three dogs with CAD were selected of which forty nine completed the study. Four were lost to follow-up.

<table>
<thead>
<tr>
<th>INCLUSION</th>
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<tr>
<td>Met at least 5 of the Favrot criteria</td>
<td>Oral glucocorticosteroids and/or antihistamines in the last 3 weeks before diagnosis</td>
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<tr>
<td>Concomitant food allergy ruled-out through elimination diet for at least 8 weeks</td>
<td>Depot glucocorticosteroids in the last 8 weeks before diagnosis</td>
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<td>Positive results in IDR and/or serological IgE test</td>
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Allergic design of ASIT (VetGoid™; Alergomet -Inmunotek, Madrid, Spain) was made taking into account: results of intradermal (Allervet™ IDR; Alergomet, Madrid, Spain) and serological tests (specific IgE) (PET ELISA™; Alergomet, Madrid, Spain), the environment and veterinary criteria. Overall, environmental allergens from the main groups (pollens, mites, and moulds) were included in the study but never more than 5 different allergoids per treatment.

Data monitoring: Safety and efficacy were registered in a clinical questionnaire every injection and evaluated at 3, 6, 9 and 12 months after the first injection. All records were included in an individual monitoring chart designed for this study, with two questionnaire forms: one to be fulfilled by the veterinarian and another one by the owner.

Parameters recorded:

- Demographical data of the animal.
- Clinical history and examination results in first visit.
- Safety:
  - Recording of adverse reactions: pruritus increasing, inflammation at point of injection, diarrhea, onset or worsening of erythema or skin lesions, urticaria or anaphylaxis symptoms.
  - Recording times: immediately after injection, in the first hour and between them.
- Efficacy:
  - Subjective evaluation of the disease (veterinary and owner): pruritus level (scaled 1 to 10), improvement in lesions, general condition of the animal and any other comment from owner.
  - Objective evaluation of key parameters: lesion evolution, medication scores, concomitant pyoderma and general condition of hair and skin.

Figure 4. Administration schedule of subcutaneous injections was: day 0: 0.2mL, day 7: 0.5mL (initial phase) and then one injection of 0.5 mL every 30 days thereafter (maintenance phase).
SAFETY: Minimal side effects were observed in 1 of all animals (n=49): an increase in pruritus after 2<sup>nd</sup> and 3<sup>rd</sup> injection.

EFFICACY: Degree, time to initial and time to maximum improvement were assessed:

<table>
<thead>
<tr>
<th>DAY</th>
<th>0</th>
<th>7</th>
<th>30</th>
<th>60</th>
<th>90</th>
<th>180</th>
<th>270</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. OF ANIMALS</td>
<td>0</td>
<td>9</td>
<td>33</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
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Table 2. Time for onset of improvement. More than 70% of the animals started to improve within the first month, with an average of 35 days.

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>30</th>
<th>31-60</th>
<th>61-90</th>
<th>91-180</th>
<th>181-270</th>
<th>271-360</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. OF ANIMALS</td>
<td>0</td>
<td>8</td>
<td>37</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>87</td>
</tr>
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Table 3. Time to maximum effect. The inter-injection period during which maximum improvement was observed was recorded; the average period was between two and three months.

Figure 4. Efficacy analysis and distribution. The efficacy results by group were based on the following criteria: excellent (no signs and symptoms and no medication needed), good (improvement in symptoms with occasional supportive medication), moderate (improvement in symptoms, but continuous medication required with a dose reduction of at least 50%) and poor (no improvement).

Ninety-two percent (92%) of cases demonstrated clinical improvement following ASIT, of which 78% were excellent or good.

CONCLUSIONS:
Allergoid-based ASIT is a safe, simple and effective etiologic treatment for canine atopic dermatitis.