Evaluation of antibody levels and clinical response to transdermal immunotherapy in dogs: a pilot study

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Abstract: This pilot study evaluated the immunologic and clinical response of dogs with atopic dermatitis to a transdermal immunotherapy cream (Allibre; Austin, TX, USA) containing dust mite (*Dermatophagoides farinae)*, ragweed (*Ambrosia artemisiifolia*), and timothy grass (*Phleum pratense)* allergens. Six dogs with elevated allergen-specific IgE levels to these allergens completed the study. Serum IgE and IgG levels and CADESI-4 scores were measured at baseline and after one, three, and six months of treatment. Analysis of immunoglobulin changes was performed using repeated measures ANOVA and Tukey's HSD test for pairwise comparisons. A linear mixed effects model as a function of months for each patient was used to evaluate changes in CADESI-4. Results demonstrated a statistically significant reduction in IgE levels for all allergens tested; IgG levels remained unchanged. *D. farinae* IgE levels decreased by 68% (2292 EAU to 732 EAU), ragweed IgE levels decreased by 43.5% (200 EAU to 113 EAU), and timothy grass IgE levels decreased by 53.8% (195 EAU to 90 EAU). All reductions were statistically significant ($p<0.001$). ANOVA results confirmed significant differences in IgE levels over time ($p=0.0015$), and pairwise comparisons using Tukey's HSD supported these findings for each allergen. Month did have a significant effect on CADESI-4 which changed by an estimated -2.42 per month (95% CI [-3.27, -1.58]). Transdermal immunotherapy reduced IgE levels and improved the severity of lesions in dogs with atopic dermatitis. Further research with larger sample sizes and extended treatment periods is warranted to assess the long-term immunologic and clinical benefits of this novel therapy.

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