Preventive sublingual immunotherapy with House Dust Mite extract modulates epitope diversity in pre-school children

Background
The preventive effect of allergen immunotherapy (AIT) on allergy and asthma development is currently assessed using primary and secondary AIT approaches. Knowledge of the immunological effects of these interventions is limited and the impact on epitope diversity remains to be defined. Methods We used high-density peptide arrays that included all known Dermatophagoides pteronyssinus (Der p) and Dermatophagoides farinae (Der f) allergens and the whole proteome of Der f to study changes in House Dust Mite (HDM) linear peptide recognition during a 2-year preventive double-blind placebo-controlled sublingual HDM AIT pilot study in 2-5-year-old children with sensitization to HDM but without symptoms. Results Preventive AIT-treated patients showed significantly higher IgG epitope diversity to HDM allergens compared to placebo-treated individuals at 24 months of treatment (P < 0.05), while no increase in IgE diversity was seen. At 24 months of treatment, IgG4 diversity for HDM allergens was significantly higher in the pAIT-treated patients compared to placebo group (P < 0.05). Potentially beneficial changes in epitope recognition throughout the treatment are also seen in peptides derived from Der f proteome. Conclusion These data suggest a beneficial immunomodulation of preventive sublingual immunotherapy at a molecular level by favoring a broader blocking repertoire and inhibiting epitope spreading.

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