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.

General information
Publication status: Published
Organisations: National Food Institute, Research Group for Gut Microbiology and Immunology, Medical University of Vienna, Austrian Institute of Technology, Evaxion Biotech, Chinese University of Hong Kong, University of Toronto
Corresponding author: Eiwegger, T.
Pages: 780-787
Publication date: 2019
Peer-reviewed: Yes

Publication information
Journal: Allergy
Volume: 74
Issue number: 4
ISSN (Print): 0105-4538
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
Original language: English
Keywords: Allergen immunity, House Dust Mite allergy, Linear epitopes, Peptide array, Preventive
DOIs: 10.1111/all.13658
Source: FindIt
Source ID: 2441359644
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review