



ORAL PRESENTATION

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Bet v 1 and homologous food allergens are similarly processed by antigen-presenting cells but differ in T cell reactivity

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Background

Various plant foods, e.g. apple and celery, express proteins that are homologues of the major birch-pollen allergen Bet v 1, e.g. Mal d 1 and Api g 1. The proteins have 63% and 72% sequence similarity with Bet v 1 and share with it a common 3-dimensional structure. Despite this great molecular similarity, Bet v 1 is the only one among its homologues with the ability to sensitise atopic individuals. The aim of this study was to assess whether differences in the uptake and processing by antigen-presenting cells and in the presentation to T cells could be responsible for Bet v 1's ability to sensitise.

Methods

Uptake of allergens by PBMC, surface binding to and degradation by monocyte-derived dendritic cells (mdDC) were assessed. Peptides derived from digestion of Bet v 1, Mal d 1 and Api g 1 by endo-lysosomal extracts were analysed by mass spectrometry. Epitope-specificity of allergen-specific T cell lines from birch pollen-allergic individuals with associated food-allergies was mapped using synthetic 12-mer peptides. Binding of allergen-derived peptides by HLA class II molecules was analysed *in silico*.

Results

Significant differences were found neither in surface binding, in the kinetics of uptake by PBMC, the intracellular degradation by mdDC nor in the degradation by endo-lysosomal extracts. An immunodominant T cell epitope was found only in Bet v 1, but could not be referred to preferential binding to the most common HLA class II molecules.

Conclusion

The ability of Bet v 1 to sensitise is not conferred by differential antigen-processing but might stem from differences in T cell reactivity and the diverse routes of uptake of the aeroallergen Bet v 1 and the food allergens.

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