



POSTER PRESENTATION

Open Access

# Hypoallergenic allergen derivatives of Pru p 3 for immunotherapy of IgE-mediated peach allergy

B Linhart<sup>1\*</sup>, A Gstoettner<sup>1</sup>, C Gamez<sup>2</sup>, I Swoboda<sup>1</sup>, A Mari<sup>3</sup>, N Papadopoulos<sup>4</sup>, R Valenta<sup>1</sup>

From Food Allergy and Anaphylaxis Meeting (FAAM 2013)  
Nice, France. 7-9 February 2013

## Background

IgE-mediated allergy to peach represents a frequent cause of severe anaphylactic reactions in Mediterranean countries. Pru p 3, a nonspecific lipid transfer protein (LTP) from peach, was identified as an important elicitor of IgE-mediated food hypersensitivity reactions to peach. Specific immunotherapy is currently the only allergen-specific and disease-modifying treatment of allergies, but has so far not been applied to food allergic patients due to the high risk of IgE-mediated side effects. Hypoallergenic Pru p 3 derivatives have therefore been constructed in order to minimize side-effects, but these molecules were not immunogenic in animal models.

## Methods

Two recombinant Pru p 3-derivatives were developed based on the Pru p 3 amino acid sequence, by introduction of point mutations, or rearrangements of Pru p 3 fragments and oligomerization. Genes encoding the resulting Pru p 3 derivatives were cloned into the expression vector pET27b and expressed in *Escherichia coli*. The proteins were purified by affinity chromatography and analyzed by SDS-PAGE and mass spectrometry. IgE-reactivity was tested by dot blot analysis and immunogenicity was investigated by immunization of rabbits.

## Results

Expression of the two recombinant Pru p 3 derivatives in *Escherichia coli* yielded high amounts of recombinant proteins. They were purified to homogeneity and exhibited a strongly reduced IgE-reactivity when exposed to sera of peach allergic patients. Upon immunization of rabbits the Pru p 3 derivatives induced a robust IgG antibody response specific for natural Pru p 3.

## Conclusion

The reported recombinant hypoallergenic Pru p 3 derivatives are candidates for specific immunotherapy of peach allergic patients.

## Disclosure of interest

B Linhart: None declared, A Gstoettner: None declared, C Gamez: None declared, I Swoboda: None declared, A Mari: None declared, N Papadopoulos: None declared, R Valenta: Grant/research support from Biomay AG, Vienna, Austria.

## Acknowledgement

This work was supported by a research grant from Biomay AG, Vienna, Austria.

## Author details

<sup>1</sup>Dept. of Pathophysiology and Allergy Research, Medical University of Vienna, Vienna, Austria. <sup>2</sup>Institute for Medical Research, Foundation Jimenez Diaz, Madrid, Spain. <sup>3</sup>Center for Molecular Allergology, IDI-IRCCS, Rome, Italy. <sup>4</sup>Allergy Research Center, 2nd Pediatric Department, National & Kapodistrian University of Athens, Athens, Greece.

Published: 25 July 2013

doi:10.1186/2045-7022-3-S3-P177

Cite this article as: Linhart et al.: Hypoallergenic allergen derivatives of Pru p 3 for immunotherapy of IgE-mediated peach allergy. *Clinical and Translational Allergy* 2013 **3**(Suppl 3):P177.

<sup>1</sup>Dept. of Pathophysiology and Allergy Research, Medical University of Vienna, Vienna, Austria

Full list of author information is available at the end of the article