



POSTER PRESENTATION

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Proteomic and immunoassay characterization of a new food allergen from hazelnut (*corylus avellana*)

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

Background

Hazelnut (*Corylus avellana*) is a common cause of lifetime lasting IgE-mediated food allergy. Symptoms range from mild oral allergy syndrome to severe life-threatening anaphylaxis. We aimed to identify allergenic determinants in children living in the Campania region (Italy) with hazelnut allergy.

Methods

Otherwise healthy children with oral food challenge confirmed hazelnut allergy were prospectively evaluated. Crude protein extracts were obtained from 5 hazelnut varieties, including autochthon, Northern Italy and Oregon (USA) cultivars, with phosphate saline buffer, pH 7.2. The immunoreactive protein components were identified by SDS-PAGE electrophoresis and Western immunoblotting, using patients sera as source of specific IgE. The IgE-binding protein bands were characterized by advanced proteomic strategies and tandem mass spectrometry (MS)-based *de novo* peptide sequencing.

Results

Four subjects were evaluated (2 male, 50%; mean age 39 m). Symptoms were: urticaria (2), angioedema (3), anaphylaxis (2). No significant differences were observed considering the main demographic and clinical characteristics at diagnosis. All children's sera were immunoreactive to a protein, not previously annotated in database, occurring in hazelnut regardless the variety. The allergen was isolated by combined chromatographic strategies. Only one patient exhibited an additional reactivity to the vicilin-like 7S 48 kDa glycoprotein (Cor a 11). The MS-based characterization

provided evidence of a high homology degree between the IgE-binding protein subunit and 11S globulin-like storage proteins expressed in other seeds. The new allergen shares structural traits with the hazelnut 11S globulin-like proteins (Cor a 9) such as the disulfide linkage of two subunits, an acidic (~35 kDa) and an alkaline (~21 kDa) one. Interestingly, only the alkaline subunit exhibits antigenic properties.

Conclusion

A previously unrecognized hazelnut allergen was identified. Except for a faint IgE reactivity of Cor a 11 recorded in a single case, the new allergen was the unique IgE-binding protein in our patients. Future study are warranted to better define possible prognostic and immunotherapeutic implications.

Disclosure of interest

None declared.

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Published: 25 July 2013

doi:10.1186/2045-7022-3-S3-P40

Cite this article as: Picariello et al.: Proteomic and immunoassay characterization of a new food allergen from hazelnut (*corylus avellana*). *Clinical and Translational Allergy* 2013 **3**(Suppl 3):P40.

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