Unexpected allergens and food products causing allergic reactions in daily life

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Background: Unexpected allergic reactions to food are frequently occurring, with even severe and fatal reactions.

Aim: Analyze the type of food products and possible presence and levels of allergens involved in unexpected reactions in daily life of patients.

Method: A prospective cohort study in adults with a doctor diagnosed food allergy. Patients reporting an unexpected allergic reaction were asked to provide information on the food product, the label and estimated consumed amount, and a sample to determine the possible culprit allergenic substances and their concentrations. This was combined with individual patient food allergies and products were analysed using ELISA or qPCR for different allergens. Results were analyzed and compared with the Reference Doses as established by Taylor et al (Food and Chemical Toxicology 63, 2014, 9-17).

Results: Patients experiencing an unexpected allergic reaction reported a very diverse range of food products. A significant part of the unexpected reactions, 78% (118 out of 151), was attributed to a specific product by the patients. In 22% the reaction was caused by a composite meal. A total of 53 food samples were received and analyzed for 28 different allergens, ranging from 1-15 allergens per product, and on average 5-6 measurements per product. In 40% of the products 1 to 4 allergens were detected per product, other allergens analyzed were not present or under the limit of detection. In 60% of the received samples no unexpected allergenic substance was detected. Levels ranged from 0.2 ppm up to 5000 ppm allergen protein/kg food product. The levels of peanut, hazelnut, sesame, cow’s milk and hen’s egg were all above action levels determined using the Reference Doses. Walnut, pecan nut, cashew nut and celeriac were also detected. The severity of the reactions for the 21 products ranged from mild to moderate (Muller score 0-3).

Discussion: In part of the unexpected reactions it was difficult to attribute to a specific food product or allergen. Reasons could be that meals consisted of multiple products, allergens might not be present or are not equally distributed in the food, or the wrong product was provided by patients.

Conclusion: Levels of unexpected allergen and estimated doses taken by patients did not exceed the Reference Doses for precautionary labeling as described in Taylor et al 2014.