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Immunoglobulin E recognition patterns to purified Kiwifruit (*Actinidia deliciosa*) allergens in patients sensitized to Kiwi with different clinical symptoms.

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Abstract

BACKGROUND: Green kiwifruit allergy is on the rise. However, no surveys testing purified major kiwi allergens have been carried out in a large population, including both kiwi-sensitized [skin prick test (SPT)-positive] and truly kiwi-allergic patients.

OBJECTIVE: To isolate major kiwifruit allergens, and to explore their relevance by in vitro and in vivo methods in a large kiwi-sensitized and -allergic population.

METHODS: A large group (n=92) of kiwi-sensitized patients with different clinical symptoms were selected, and double-blind, placebo-controlled, food challenges to kiwi were performed in 52 of them. The three major IgE-binding proteins from kiwifruit extracts were isolated and characterized by N-terminal amino acid sequencing and molecular size and glycosylation analysis. The allergenic potency of the three kiwi allergens, and of avocado Pers a 1 as a model allergen associated with the latex-fruit syndrome, was tested by specific IgE quantitation, immunodetection assays and SPTs.

RESULTS: The isolated kiwifruit allergens were identified as actinidin Act d 1, glycosylated thaumatin-like Act d 2 and a novel 40 kDa glycoprotein designated as Act d 3.02. Specific IgE to each of the three allergens was found in over 60% of sera from kiwi-sensitized patients, and Act d 1 and Act d 2 induced positive SPT responses in over 50% of the tested patients. A significant link between IgE levels to Act d 1 and Act d 3 and anaphylaxis was uncovered. Avocado Pers a 1 showed an in vitro sensitization prevalence of around 45%, but a low in vivo reactivity.

CONCLUSION: Act d 1, Act d 2 and Act d 3 are major allergens in the population studied. Severe symptoms after kiwi ingestion are associated with high IgE levels to Act d 1 and Act d 3.

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