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Characterization of cross-reactive bell pepper allergens involved in the latex-fruit syndrome.

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Abstract

BACKGROUND: Between 30% and 50% of individuals who are allergic to latex products are also allergic to specific plant foods, a fact that is well documented as the latex-fruit syndrome. Simultaneous sensitization to latex and bell pepper has been previously reported. Although bell pepper fruits are frequently consumed raw, cooked or as a spice, little is known about the cross-reactive allergens.

OBJECTIVE: In this study we wished to identify bell pepper allergens involved in the latex-fruit syndrome.

METHODS: Sera of four patients who displayed clinical symptoms to latex and bell pepper were used in immunoblot studies on protein extracts of three different cultivars of fresh bell pepper and fresh Hevea latex. Cross-reactive allergens were identified by inhibition experiments using recombinant Hev b 8 (latex profilin), and natural Hev b 2 (latex beta-1,3-glucanase) in addition to the protein extracts. A novel cross-reactive IgE-reactive 30 kDa protein was subjected to sequence analysis.

RESULTS: Three patients displayed IgE to profilins from bell pepper fruits and latex. Two patients possessed IgE to Hev b 2, a latex beta-1,3-glucanase, and a homologous protein in bell pepper. One patient possessed IgE reactive with a protein of 30 kDa identified by N-terminal sequencing as an l-ascorbate peroxidase and another patient to a protein of 38 kDa. Additionally, IgE binding proteins in two higher molecular weight ranges showed cross-reactive capacities.

CONCLUSION: Our findings show on the molecular level that bell pepper is part of the latex-fruit syndrome. For the first time we have identified the major latex allergen Hev b 2, a beta-1,3-glucanase, and the bell pepper l-ascorbate peroxidase as cross-reactive allergens. We were also able to show that profilins are responsible for some of the IgE cross-reactivity.

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