Simultaneous Allergy to Vine Pollen and Grape

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Abstract. We report the case of an 18-year-old female student suffering from seasonal rhinoconjunctivitis with sensitization to pollens from vine and also from grass, olive, and Chenopodiaceae plants who had recently developed episodes of itching, maculopapular rash, and facial angioedema after eating grapes. Testing revealed positive reactions to vine pollen and grapes, and specific IgE were found for both allergens. Immunoblotting and inhibition assays revealed cross-reactivity between the allergenic structures of vine pollen and grape fruit and also among botanically unrelated pollens.

Keywords: Food allergy. Fruit allergy. Grape. Vine pollen allergy. Immunoblotting.
Allergenic reactions to grape were initially reported in 1999 [20]. However, until 2003, only a few reports were available describing allergic reactions to grape [3-5] until Pastorello et al [6] described 14 patients allergic to grape or wine and identified and characterized the main grape allergens. The study of patients with allergy to grape and/or wine allowed us to compare the IgE-binding properties of grape and palm pollen extracts with vine pollen extract using immunoblotting. Immunoblot analysis revealed IgE-binding bands at 63, 60, 52, and 26 kilodalton (kd) and other faint bands between 44 and 30 kd when vine pollen extract was studied. Preincubation of serum from the patient with vine pollen extract or O europaea resulted in complete inhibition of IgE binding in Western blots. Inhibition was almost total with L perenne pollen and a partial inhibition was observed with S kali pollen. Immunoblot inhibition performed with vine pollen in the solid phase showed a total inhibition with grape and with O europaea and L perenne pollens and a partial inhibition with S kali (Figure 2). These results demonstrate the existence of cross-reactivity between vine pollen and grape extracts and indicate common antigenic structures between a vegetable food and other botanically unrelated pollen species.

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Preincubation concentration for all extracts: 2 mg/mL. kd indicates kilodalton.
most important allergen from grape was an endochitinase 4 (30 kd protein). The other allergens described—a 9 kd lipid-transfer protein and a 24 kd thaumatin-like protein—were related to food allergy reactions to fruits, such as peach and cherry.

In our study, grape IB detected 24-30 kd allergens. However there were no low molecular weight binding proteins because our patient did not suffer from fruit allergy, despite a positive cutaneous test to cherry [7].

The clinical history and positive results to cutaneous and conjunctival tests to vine pollen extracts suggest that vine pollen was the primary sensitizer in our patient. Allergic reaction after eating grapes occurred 3 years later.

In other studies, we found that vine pollen showed 55-66 kd IgE-binding bands in 4 out of 9 patients allergic to vine pollen (unpublished data). In contrast to grape, vine pollen does not bind low molecular weight proteins. However L perenne and O europaea share the most important allergens from vine pollen, as indicated by the total inhibition in immunoblotting experiments.

Grape allergy in patients allergic to vine pollen has not been reported previously. Identification of common allergenic structures could provide an explanation for sensitivity to both vegetable substances.

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References


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ERRATUM:


The notation “BBS36” was incorrect. The title should be “Effect of probiotic Bifidobacterium longum BB536 in relieving clinical symptoms and modulating plasma cytokine levels in Japanese cedar pollinosis during the pollen season. A randomized double-blind, placebo-controlled trial.”