

Correspondence

ALLERGY TO LIPID TRANSFER PROTEINS: CROSS-REACTIVITY AMONG POMEGRANATE, HAZELNUT, AND PEANUT

To the Editor:

Lipid transfer proteins (LTPs) are 9-kDa proteins that belong to a pan-allergen family widely distributed in fruits, vegetables, and pollens. Their high resistance to heat treatment and proteolytic digestion and their association with systemic and severe symptoms have led to the proposal of LTP as a model of true plant food allergen.¹

Pomegranate (*Punica granatum*) fruits have rarely been reported to cause immediate hypersensitivity after ingestion.²⁻⁴ Allergy to pomegranate was subsequently documented by means of positive skin prick test (SPT) and in vitro assay results, and thereafter 29-kDa and 12-kDa protein allergens that caused systemic reactions after fruit ingestion were described.²⁻⁴

Herein, we describe a case of a 21-year-old atopic man who experienced an anaphylactic reaction (urticaria, facial angioedema, and hypotension) after ingestion of pomegranate fruit. Three months later, he presented with a similar systemic reaction after hazelnut and peanut ingestion. He had asthma and rhinoconjunctivitis as a child and was treated with specific immunotherapy with mite dust and mold extract.

SPTs were performed with fresh fruit, and SPTs with commercial extracts were performed for a panel of plant food and pollen allergens (Diater Laboratories, Madrid, Spain). The presence of IgE specific serum antibodies to pomegranate, hazelnut, and peanut extract was investigated with an IgE immunoblotting technique. Cross-reactivity studies were performed by means of IgE blotting inhibition with rCor a 8

(recombinant hazelnut LTP) (Paul-Erlich-Institut, Langen, Germany) as an inhibitor.⁵

The results of SPTs were positive for grass, olive, plane tree, cypress, and chenopodium pollen extracts and for hazelnut, peanut, peach, apple, maize, and rice food extracts. The results of SPTs with fresh pomegranate were also positive. IgE immunoblotting of pomegranate extract revealed the known 29-kDa binding band protein together with another new one with a molecular weight of approximately 9 kDa. This 9-kDa binding band protein was also presented in other food extracts studied and in plane tree pollen extract (Fig 1A) and was completely inhibited with rCor a 8 as the inhibitor agent (Fig 1B).

LTPs are the major allergens of Rosaceae fruits and other plant foods in the Mediterranean area but not in central and northern European populations.¹ In fact, hazelnut LTP is a relevant allergen for most Spanish patients with hazelnut allergy and can cause severe allergic reactions, and rCor a 8 has been demonstrated to be a useful tool for in vitro diagnosis of these severe allergic reactions.⁵ On the other hand, pomegranate has been considered a potential allergen in patients who experience anaphylaxis in autumn and who live in countries where this fruit is consumed, such as the Mediterranean area.²

Because of the kind of systemic reactions presented, the geographical area, and the positive SPT results with peach, apple, maize, and plane tree pollen extract (where LTPs are known to be relevant allergens), we can expect a pomegranate and peanut LTP to be an ideal candidate for the cause of cross-reactivity. This theory was confirmed by means of IgE immunoblotting inhibition, where the presence of an unknown binding band protein of 9 kDa in pomegranate and

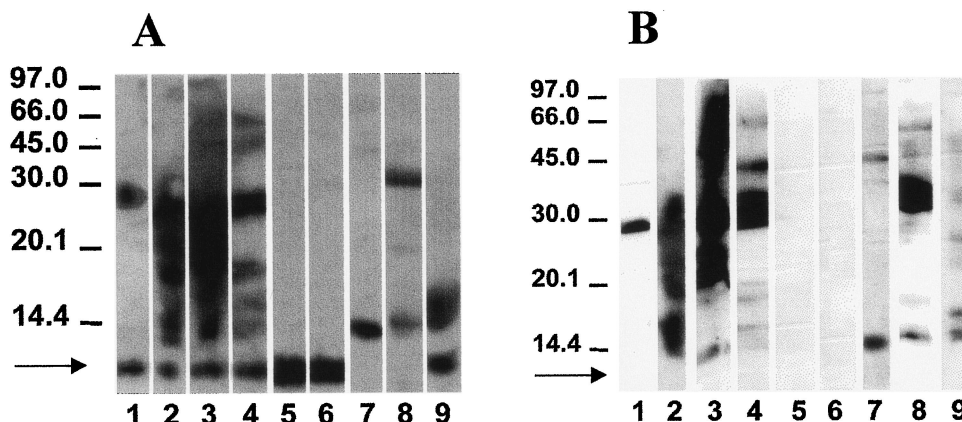


Figure 1. A, IgE immunoblotting. B, IgE immunoblotting inhibition with rCor a 8 as inhibitor. Lane 1, pomegranate; lane 2, peanut; lane 3, hazelnut; lane 4, plane tree pollen; lane 5, apple; lane 6, peach; lane 7, cypress pollen; lane 8, chenopodium pollen; and lane 9, rice.

peanut extracts was revealed and was completely inhibited by rCor a 8. This case report confirms that LTP is an important food allergy pan-allergen in the Mediterranean area and suggests that a peanut LTP may be responsible of cross-reactivity among peanut, nuts, and some fruits.

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