

f425 rCor a 8

rCor a 8 from hazelnut (*Corylus avellana*)

Clinical Utility

Presence of specific IgE antibodies to Cor a 8 is a risk marker for potential severe reactions in patients with a suspected allergy to hazelnut.

Among hazelnut-allergic individuals in the south of Europe, the predominant sensitization is to the lipid transfer protein Cor a 8 (1-3). Cor a 8 is often associated with severe food allergic reactions to hazelnut, including anaphylaxis (1, 2, 4, 17).

Allergen Description

Cor a 8 is a 9.4 kDa lipid transfer protein in hazelnut. Lipid transfer proteins (LTPs) are small molecules of approximately 9-10 kDa that display unusual stability and are highly resistant to simulated gastric digestion (5) and heat treatment (6-10). Plant LTPs have a conserved 3-dimensional structure and are widely distributed throughout the plant kingdom. Their biological function is to facilitate the transport of lipids, phospholipids and galactolipids across cellular membranes.

Studies have shown that most hazelnut-allergic individuals in central and northern Europe are sensitized predominantly to Cor a 1, a Bet v 1 homologue, whereas in the south of Europe the predominant sensitization is to Cor a 8 (1-3). This relationship can also be seen in **figure 1**. The 11S globulin Cor a 9 may be a prominent pollen-independent hazelnut allergen in the United States (18).

Cor a 8 is associated with more severe reactions, including anaphylaxis, whereas Cor a 1 is associated mainly with local reactions such as oral allergy syndrome.

Clinical Experience

In a study of 65 Swiss and German hazelnut-allergic patients, the prevalence of IgE reactivity to recombinant Cor a 1.04 was 98.5%, to rCor a 2 15.4%, and to Cor a 11 less than 50%, whereas no reactivity was found to rCor a 8 (15). Similarly, in a study of northern European hazelnut-allergic patients, sensitisation to Cor a 1.04 was demonstrated in 16/17 subjects, and to Cor a 2 in 7/17 subjects. No one in the study group displayed sensitization to Cor a 8 (16). These observations may explain why certain study groups appear to be less reactive to roasted hazelnut than to raw nut, as Cor a 1 and Cor a 2 are more heat-labile than Cor a 8 (2).

In southern Europe, particularly the Mediterranean area, the role of the allergens is reversed. In a study of 26 Spanish hazelnut allergic subjects without birch pollen allergy, including 10 with anaphylaxis, the prevalence of specific IgE antibody reactivity to Cor a 8 was 62-77%,



depending on detection method used. Only 1 patient displayed IgE reactivity to Cor a 1.04 and no one to Cor a 2. The authors concluded that Cor a 8 is a highly relevant allergen for the majority of hazelnut allergic Spanish patients and that it is associated with severe allergic reactions (1).

An Italian study showed that those who had experienced severe anaphylactic reactions to hazelnut were shown to have specific IgE reactivity to Cor a 8 (2). Similar results have been reported elsewhere (17).

Cross-Reactivity

Cor a 8 may be useful as a tool to assess potential LTP-mediated cross-reactivity to a range of plant-derived foods (1). LTPs are present both in pollen and plant-derived foods and cross-reactions have been reported. The presence of specific IgE to Cor a 8 in hazelnut-allergic patients may thus help explain allergic reactions to foods other than hazelnut.

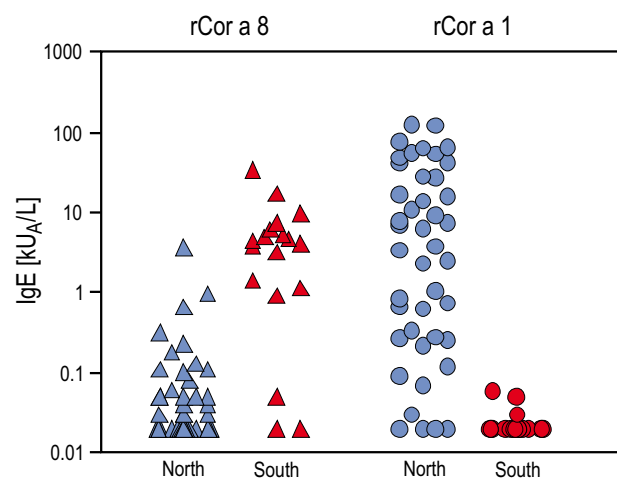


Figure 1. Hazelnut positive samples from north Europe (n=43) and south Europe (n=18) tested with rCor a 8 and rCor a 1 respectively.

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