**Clinical Utility**
Hazelnut is one of the most frequently observed sources of food allergy (1-3). In populations from Northern Europe and other Fagales-rich (birch, alder, hazel, hornbeam, and oak) regions, reactions are in most cases elicited by Cor a 1. Cor a 1 is an allergen of the PR-10 protein family with about 65% sequence homology to Bet v 1, the major allergen in birch pollen. ImmunoCAP® Allergen rCor a 1 (f428) is useful in identifying individuals with birch pollen related allergy to hazelnut. Sensitization to PR-10 proteins is most often associated with milder symptom such as the oral allergy syndrome (OAS).

**Allergen Description**
Cor a 1 is a 17.4 kDa protein and a Bet v 1 homologue, which is also recognised as a PR-10 protein. The allergen is found in hazel pollen as well as in the nut. However, the isoforms present in the nut are distinct from those identified in hazel pollen and IgE cross-reactivity between the nut protein and the pollen protein is only partial. Cor a 1 is heat-labile protein. Heat treatment destroys the native three-dimensional molecular structure of PR-10 proteins and the IgE-binding has been shown to be significantly decreased after heating and activity of Cor a 1 was shown to be absent in roasted hazelnut meal (4-6).

**Clinical Experience**
In Europe the prevalence of hazelnut allergy is estimated to be between 0.1% and 0.5% (7-8). Studies have shown that most hazelnut-allergic individuals in central and northern Europe are sensitized predominantly to Cor a 1, whereas in the south of Europe the predominant sensitization is to Cor a 8 (9-12). This relationship can also be seen in figure 1. Cor a 1 is associated mainly with mild adverse reactions such as OAS, whereas Cor a 8 is associated with more severe adverse reactions, including anaphylaxis (9). The 11S globulin Cor a 9 may be a prominent pollen-independent hazelnut allergen in the United States (12).

**Cross-Reactivity**
Cor a 1 may be a useful tool to assess potential PR-10 mediated cross-reactions to a range of pollen allergens. PR-10 proteins have been identified not only in pollen from Fagales (birch, alder, hazel, hornbeam and oak) but also in a range of fruits and vegetables such as apples, carrots, celery, stone fruits. In some, but not all, cases the immunological cross-reactivity is expressed as clinical reactions to the plant foods (13-14).
References


For further reading, see: www.immunocapinvitrosight.com