

f419 rPru p 1 (recombinant)  
rPru p 1 from peach (*Prunus persica*)



### Clinical Utility

Sensitization of Pru p 1 (Bet v1 homologous) is most often associated with milder symptom such as the oral allergy syndrome (OAS) (1-3).

ImmunoCAP® Allergen rPru p 1 (f419) is a marker of birch pollen-associated food cross-reactivity (the “birch-fruit syndrome”).

### Allergen Description

Pru p 1 is a 17 kDa peach protein belonging to the PR-10 protein family. The major birch pollen allergen Bet v 1 is the most prominent member of this family, with which Pru p 1 shares 59% amino acid sequence identity (4). In some allergen sources, PR-10 like proteins have been shown to be encoded by multiple genes, giving rise to arrays of closely related isoforms. Further, PR-10 proteins are produced intracellularly in a tissue-dependent manner during plant development and their expression is subject to regulation by factors such as environmental stress or pathogen attack (5). The three-dimensional structure of several PR-10 protein has been determined and found to contain a solvent-exposed cavity in which ligands such as fatty acids, brassicosteroids or phospholipids may bind (6, 7).

Pru p 1 is heat labile (8, 9) and most subjects suffering from birch pollen induced peach allergy may therefore tolerate food items containing cooked peaches.

The concentration of Pru p 1 in peach fruit is low (10). In addition Pru p 1 is easily degraded and/or chemically modified during extraction procedures and may thus be inadequately represented in natural peach extracts (11).

### Potential Cross-Reactivity

PR-10 proteins have been identified in many plant foods as well as in pollen of Fagales species (e.g. birch, hazel, alder, oak, hornbeam, beech). Despite relatively modest levels of sequence identity, homologues from more distantly related plant species, such as Pru av 1 from cherry and Api g 1 from celery, are structurally similar (12, 13) which explains the observed cross-reactivity patterns within the protein family. Pru p 1 cross-reacts extensively with Bet v 1 homologues from *Prunus* species (e.g. cherry, apricot, plum) and other Rosaceae fruits such as apple (Figure 1) and also, although to a lower degree, with PR-10 proteins from foods like carrot, celery, soy and peanut.

### Clinical Experience

While Pru p 1 is the vastly predominant allergen in birch pollen-related peach allergy, IgE reactivity to Pru p 1 is less common among peach allergic subject in birch-free areas such as many Mediterranean regions.

Sensitization to Pru p 1 is not necessarily manifested as clinical reactions to peach but is a good marker for the birch-fruit syndrome.

Ingestion of peach and other related foods may elicit local reactions such as the oral allergy syndrome (OAS) and rhinoconjunctivitis but also, in rare cases, more severe systemic reactions (1-3).

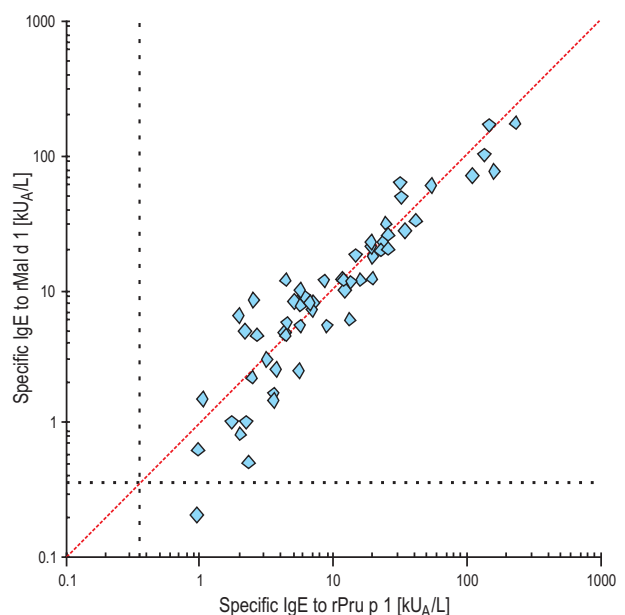


Figure 1. IgE antibody binding to the two Bet v 1 homologues rPru p 1 from peach and rMal d 1 from apple (n=58).

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