

f421 rPru p 4 (recombinant)
rPru p 4 from peach (*Prunus persica*)



Clinical Utility

Sensitization to profilin is often regarded to have lower clinical relevance and is mainly associated with milder symptoms. However, sensitization to profilin may be of clinical importance in certain food allergies, for example to citrus fruits, melon, banana and tomato (1-3).

ImmunoCAP® Allergen rPru p 4 (f421) is a marker for profilin sensitization.

Allergen Description

Pru p 4 is a 14 kDa, acidic protein belonging to the profilin protein family. Profilins are cytoplasmic proteins present in all eukaryotic organisms. They bind actin and polyphosphoinositides and play an essential role in the regulation of cytoskeletal rearrangement. Profilins show a tendency to multimerize through intermolecular disulfide bonds (4), which may be of importance to their IgE binding capacity.

The amount of profilins in plant foods is low, which complicates the isolation of the natural allergen (5). Cloning from a peach cDNA library resulted in the identification of two isoforms of profilin, rPru p 4.01 and rPru p 4.02, sharing 80% amino acid sequence identity with each other and over 70% sequence identity with profilins from other fruits, seeds, vegetables and pollens (5).

Profilins are heat labile (6) and, although rPru p 4 has been demonstrated to be stable in saliva, it was rapidly degraded in simulated gastric fluid (5).

Potential Cross-Reactivity

Plant profilins are structurally highly conserved and are often referred to as pan-allergens. Pru p 4 exhibits extensive cross-reactivity with profilins from a variety of other sources, including foods as well as tree, grass and weed pollens (7-10).

Clinical Experience

The prevalence of IgE antibodies to profilins among plant food allergic subjects is often in the range of 10-30%, but IgE to profilin is typically accompanied by additional sensitizations and rarely dominant with respect to magnitude of the IgE response (11). However, profilins are suggested to have an important role in certain grass and weed pollen related plant food allergies (12, 13).

In a study group from Madrid (5), immunoblot analysis indicated specific IgE binding to rPru p 4 in as many as 15 of the 29 (51%) peach allergic subjects investigated. All 15 sera reactive to rPru p 4 also showed IgE binding to Bet v 2, birch pollen profilin.

In a recent study of peach allergic subjects from Central Europe (n=37) and Spain (n=18), the prevalence of sensitization to rPru p 4 was 35% and 11%, respectively. However, the IgE response to rPru p 4 dominated over those to rPru p 1 and rPru p 3 in only 3 of the 55 subjects (5%), supporting the notion that profilins may be of clinical relevance only to a minority of food allergic subjects (14, 15).

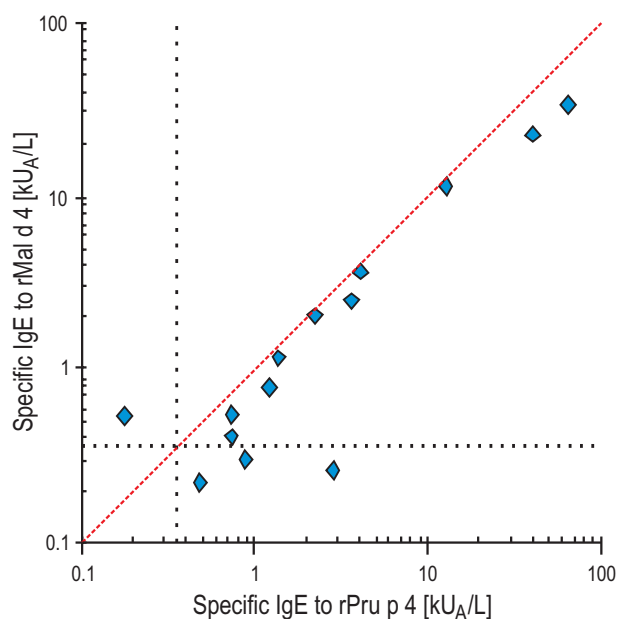


Figure 1. IgE antibody binding to the two profilins rPru p 4 from peach and rMal d 4 from apple (n=22).

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