

f420 rPru p 3 (recombinant)  
rPru p 3 from peach (*Prunus persica*)



### Clinical Utility

Individuals sensitized to LTP are at elevated risk of suffering severe food reactions (1-5).

ImmunoCAP® Allergen rPru p 3 (f420) is a marker for sensitization to LTP in fruits, but also a marker for LTP sensitization to other more distantly related plant foods such as hazelnut, peanut, grapes and/or wheat.

### Allergen Description

rPru p 3 is a 9 kDa, basic lipid transfer protein (LTP) (6-8) found in high concentrations in peach peel (9, 10) and in the hair-like surface fuzz of the fruit (11).

Plant LTPs are ubiquitous extracellular proteins localized to the cell wall (12). They exhibit antifungal and antibacterial activity (13) and belong to the PR-14 protein family (14, 15).

Pru p 3 has the characteristic compact structure of LTPs formed by four alpha-helices, connected by short loops and held together by a conserved network of four intramolecular disulphide bridges (16). The cavity between the helices may bind a range of amphiphilic ligands, such as fatty acids and phospholipids (17). rPru p 3 appears to exist in two conformational states with different ligand binding activity (16).

Plant LTPs exhibit high resistance to both heat and gastric proteases and it has been proposed that the stability of LTPs may in part explain their strong allergenicity (18-20).

### Potential Cross-Reactivity

Within the Roseaceae family, LTPs are structurally highly conserved and cross-react extensively (Figure 1). However, IgE cross-reactivity has also been demonstrated between LTPs from botanically unrelated food sources, such as walnut, peanut, legumes and cereals, as well as from pollens of *Artemisia* and *Platanus* (19, 21-27).

### Clinical Experience

LTPs are major allergens in plant food allergies in the Mediterranean area. While fruit LTPs are predominantly considered primary sensitizers, or “true” food allergens, some pollen LTPs cannot be excluded as possible causes of cross-reactive sensitization (28-30). In a study from Spain, it was found that even though apples were found to be consumed in greater quantities than peach, positive challenge reactions are more common to peach (31), making rPru p 3 a very useful marker for plant food allergy in birch-free areas.

IgE reactivity to LTPs may elicit local as well as systemic reactions (1, 28, 29). In a population of 22 LTPsensitized Spanish cherry allergic subjects, half reported having experienced generalized or severe reactions to cherry whereas half reported only mild or local reactions in the oral cavity (2). However sensitization to Pru p 3 should be regarded as a risk factor to be considered together with the patient's clinical history (3-5).

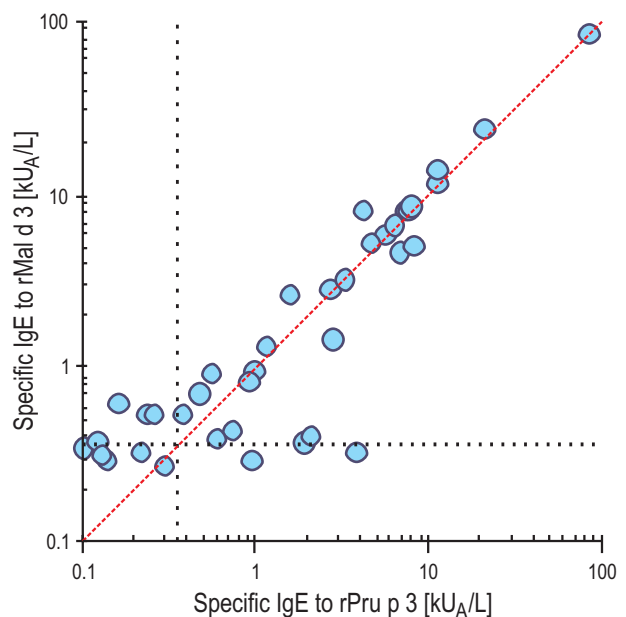


Figure 1. IgE antibody binding to the two LTPs rPru p 3 from peach and rMal d 3 from apple. In samples from fruit allergic individuals (n=77).

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