f427 rAra h 9

rAra h 9 from peanut (*Arachis hypogaea*)

Possible Clinical Utility

Recombinant Ara h 9 is a marker of sensitization to peanut lipid transfer protein (LTP). LTPs are often associated with systemic and severe reactions in addition to oral allergy syndrome (OAS). However, severe reactions to peanut due to LTP have so far not been well documented. Since LTPs are generally stable to heat and resistant digestion, there is a risk for allergic reactions also to cooked and processed food.

Allergen Description

In contrast to tree nuts, peanuts are the seeds of an annual legume that grows close to the ground and produces its fruits below the soil surface. Peanut is a member of the *Fabaceae* family and contains at least 32 different proteins of which about 18 have been identified as capable of binding specific IgE (1).

Ara h 9 is a lipid transfer protein (2-5). Lipid transfer proteins (LTPs) are small molecules of approximately 9 kDa - 10 kDa and are highly resistant to digestion and heat denaturation (3, 6-10).

LTPs are highly conserved and widely distributed throughout the plant kingdom. Their biological function is to facilitate the transport of lipids, phospholipids and galactolipids across cellular membranes. They are also believed to have a role in defence against pathogens and are therefore classified as belonging to a family of pathogenesis-related (PR) proteins, PR-14. Several LTPs have been identified as relevant allergens in plant foods and pollens.

Potential Cross-Reactivity

LTPs are panallergens and strong cross-reactivity can be displayed among various plant food LTPs (11).

Significant cross-reactivity between Ara h 9 and other LTPs in foods should be considered and is expected to be particularly relevant in southern Europe, where LTPs play an important role in food allergy (13).

Other fruits and vegetables containing lipid transfer proteins that may result in cross-reactivity include sweet chestnut, cabbage, walnut, lettuce, pomegranate and hazelnut (5, 14-18). Ara h 9 shares 60-70% amino sequence identity with LTPs from a number of commonly consumed foods, including peach, apple, pear, plum, cherry, hazelnut, lentils, sunflower, beans, chestnut and strawberry.

Clinical Experience

In southern Europe food-allergic individuals sensitized to LTPs frequently experience both OAS and systemic symptoms after eating an offending food (12). Even if LTPs are believed to induce sensitization mainly by the oral route, as association to certain LTP-containing pollens, such as plane tree, mugwort and *Parietaria* pollen, cannot be excluded. Due to its stability to food processing and resistance to proteolytic digestion, it has been proposed that LTP may reach the intestinal tract in an almost unmodified form (12, 19).

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