**Clinical Utility**

Art v 3 is a Lipid transfer protein (LTP) form mugwort pollen displaying cross-reactivity to *Rosaceae* fruit LTPs, such as Pru p 3 from peach and Cor a 8 from hazelnut (1). Sensitization to allergens belonging to the LTP protein family is quite common in the Mediterranean countries, but rare in central and northern Europe. Food allergic individuals sensitized to LTPs often experience systemic and severe reactions, in addition to oral allergy syndrome (OAS) (2-10). Even if sensitization to LTPs is believed to occur mainly by the oral and gastrointestinal route, an association to respiratory sensitization by certain LTP-containing pollens, e.g. mugwort and plane tree pollen, can not be excluded (11-13). Allergen component Art v 3 in combination with ImmunoCAP® Allergen w231, Art v 1 will help to provide a more detailed sensitization profile among mugwort allergic patients complementing the extract based ImmunoCAP Allergen w6.

**Allergen Description**

Mugwort is native to Europe, Asia and northern Africa but is now also found throughout the eastern USA.

Six mugwort pollen allergens have been characterized to date (14). A majority of mugwort allergic patients are sensitized to Art v 1, which is recognized as a major allergen unique to mugwort. In the Mediterranean area, Art v 3 may qualify as a second major mugwort allergen, with a reported prevalence of sensitization of 36 - 86% among Spanish mugwort allergic individuals (13, 15-16).

Art v 3 belongs to the family of non-specific lipid transfer proteins (nsLTP), comprising 9-12 kDa proteins that are highly resistant to digestion and heat denaturation (1, 13, 17-20). Their biological function is to facilitate the transport of lipids across cellular membranes. nsLTPs are widely distributed throughout the plant kingdom and several have been identified as relevant allergens in plant foods and pollens.

**Cross-Reactivity**

Cross-reactivity has been reported between Art v 3 and nsLTPs from *Rosaceae* fruits and chestnut (18, 21-22). However, despite significant sequence similarity among nsLTPs, there are also several examples of little or no demonstrable inter-species cross-reactivity, for example between Art v 3 and Par j 1, a LTP of Parietaria (13).

Besides Art v 1 and Art v 3, mugwort contains other allergens, such as profilin (Art v 4), polcalcin (Art v 5) and pectate lyase (Art v 6), which can lead to significant allergic reactions and cross-reactivity in a minority of pollen-sensitized patients (14, 23).

**Clinical Experience**

Mugwort pollen often induces hayfever, asthma and conjunctivitis in sensitized individuals. It is known as one of the main causes of allergic reactions in the European late summer and autumn and affects about 10-14% of patients suffering from pollinosis (14).

As a result of its cross-reactivity with Pru p 3 from peach and related allergens from other Rosaceae fruits, Art v 3 may play a role in pollen-food syndromes associated with weed pollen allergy (13, 22). It has even been proposed that Art v 3 may act as a primary sensitizer in some patients with Pru p 3 mediated peach allergy (13).

Additionally, an association between mugwort pollen sensitization and mustard allergy has been proposed, even though no molecular explanation has so far been identified (24).
References


For further reading, see: www.immunocapinvitrosight.com