Allergy for tree pollens and crustaceans: testing and treatment

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As spring is in full swing, allergy to seasonal allergens such as tree pollens becomes health issues for many individuals. Allergic rhinitis (AR) is an inflammation of airways caused by the inhalation of airborne allergens such as pollens which often leads to asthma.[1] AR also lower productivity and quality of life. Inhalation of allergens triggers the release of chemical mediators, including histamine and leukotrienes through IgE crosslinking on basophils and mast cells. Treatment using corticosteroid or antihistamine for AR is effective but not long lasting and they may have undesirable side effects.[2] In this issue, Ai et al. reported the use of a traditional herbal Chinese medicine gel called Xingbi, which is comprised of a formulation of four traditional herbs, on a guinea pig model of AR.[3] Using an ovalbumin sensitization and challenge regimen, they compared the efficacy of the gel and glucocorticoid budesonide in limiting clinical condition occurrence. Xingbi gel, at both low and high doses, significantly decreased the clinical scores, serum LTE4 and IgE levels, as well as nasal mucosa eosinophil counts compared to budesonide. The effect of this Chinese medicine is both local and systemic since the treatment affected the allergic mediators and IgE in sera. How the herbal medicine influences the immune response to allergens is not well understood as yet but its high potency against AR begs for further detailed mechanistic investigations.

In this issue, there are two reports on the characterization of allergens, one from pollen and one from shrimps. Profilins belong to a family of proteins found in eukaryotic cells and are recognized as allergens in pollens, latex and foods. Sensitization by profilins from pollens is proposed to trigger IgE cross reactivity to fruits[4] and natural and recombinant profilins are useful in the diagnostic of allergy. In this issue, Ali-Sadeghi et al. describe the cloning of a novel allergen, the mesquite (*Prosopis juliflora*) pollen profilin, designated Pro j 2, and characterized its IgE binding activity in sera of pollen allergic patients.[5] The mesquite survives and grows well in tropical climates and is increasingly associated with allergic cases in the Middle East and South Asia. IgE reactive to the pollen of this plant have been reported to cross react with other tree pollens[6] and amino acid sequence analysis revealed that Pro j 2 has high similarities with other profilins from unrelated families. The authors further produced the recombinant Pro j 2 and tested for allergic patient serum IgE reactivity. Approximately 50% of patient sera showed cross reactivity to the recombinant allergens, suggesting that these recombinant profilins may be useful for diagnosis.

Skin prick test (SPT) is a standard method for detecting food specific IgE profiles in food allergy. A report in this issue characterized the stability and potency of the raw and boiled shrimp extracts from both fresh water and seawater shrimps in skin prick test. In their previous study, the same group reported a decline in allergens availability in lyophilized preparation of raw or boiled shrimp after 2 weeks of storage at 4°C while a storage condition at -20°C seemed to better preserve the IgE-specific allergens.[7] In this issue, Pariyaprasert et al. reported that the shrimp extracts, either raw or boiled, that were prepared and stored in buffer and sterile solutions at 4°C showed stable allergenicity when tested using SPT even after 30 days.[8] The results obtained from SPT correlated well with the prick to prick test from fresh shrimps in patients allergic to shrimp. The authors suggested that lyophilizing shrimps before extraction and subsequent use may be an appropriate procedure for improving the diagnosis of seafood allergy. Lyophilized shrimp extracts can then be kept at 4°C for up to a month without significant loss of allergens.

These two reports emphasized the importance of allergen characterization, either in their natural crude or recombinant form, for diagnostic tests and provided a framework for future therapeutic applications.

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