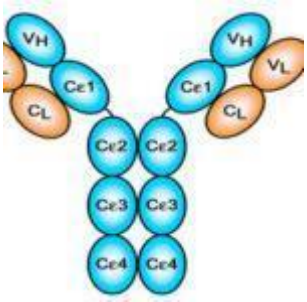
Immuno-Algeria: Allergic activity of IgE binding molecules



IUIS-FAIS-SAI-AAA Immuno-Algeria course took place remotely between 11th May -12th June. The theme of the course was *"Challenge of Allergy in the Molecular Era"*. To ensure that all attendees had the immunological knowledge required for advanced content that was going to be discussed during the meeting, weekly immunology refresher lectures were provided during the month of May. This was followed by a 2 week long meeting focused on allergy content. This week we highlight a lecture by Professor Luis Caraballo on "**The experimental strategies to evaluate the allergenic activity of IgE-binding molecules**."

Allergens are characterized by two important properties; the first being the allergenicity and the second being the allergenic activity. The later represents the capacity of an allergen to induce allergic inflammation, a process that can be dependent or independent of IgE activity. As a result, the IgE binding property of an allergen only evaluates a part of the allergenic activity and must be considered as an initial

step in studying the allergenic properties.

Professor Caraballo insisted that the traditional way of thinking of an allergy response focused only on the frequency of IgE antibody binding, which was a limited perspective that restricted the scope of allergy research for a long time. In fact, the characterisation of clinically relevant allergens only starts with detecting IgE antibody binding capacity. However, more properties that can influence the whole spectrum of allergenic activity, and these properties are critical to selecting individual allergens for component-based immunotherapy and preventive vaccines.

Despite the large number of discovered and registered allergens, we have a limited understanding of the allergenic activity and clinical importance for most of them. For instance, the allergenic activity of most indoor IgE antibody binding components has not been investigated, despite the major advances in the field of allergology over the last 20 years, specifically in component-resolved diagnostics and immunotherapy. Some of the experimental protocols researchers used to determine the allergenic activity and clinical relevance of IgE antibody binding molecules include (but not limited to):

- the intrinsic proinflammatory mechanism of action
- provocation tests (*in vivo* or *in vitro*)
- animal models of experimental allergy
- Human case-control studies or avoidance studies, and immunotherapy trials.

In summary, the allergenic activity and clinical relevance have so far only been studied for few allergens. Identification of the clinical relevance of allergens will be an important step towards the engineering of innovative molecular allergy vaccines.

Reference: Caraballo et al. , (2020). The allergenic activity

and clinical impact of individual IgE-antibody binding molecules from indoor allergen sources. World Allergy Organization Journal

Summary by Ikram Mezghiche