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Allergen immunotherapy: What does the future hold?

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Full Text

Allergen immunotherapy (AIT), the only known causal therapy for allergies is globally being used in the following formulations – subcutaneous immunotherapy (SCIT), sublingual immunotherapy (SLIT), and allergoids. In India, AIT has been used for approximately 50 years, with aqueous extract based SCIT being the conventionally accepted treatment modality. Limitations of the current formulations of the native extracts utilized for SCIT and SLIT have led to increased research on innovative formulations for AIT. In the recent years, a lot of research is being conducted and primarily focuses on reducing the number of AIT doses to achieve efficacy, improving safety and compliance, and utilizing AIT for newer indications. We need to keep abreast with the latest developments in the field of AIT and would look forward to these advancements being available and improve patient care and outcomes.

The future of AIT being discussed in an article of this issue “Future modalities in allergen immunotherapy: A brief overview” notes that the approaches are divided into the following sections:

New routes of AIT New formulations of AIT and New combination with AIT.

Among the new routes are included as follows: oral immunotherapy (OIT), epicutaneous immunotherapy (EPIT), and intralymphatic immunotherapy (ILIT). In OIT, the allergenic food is mixed in a vehicle and taken orally in increased concentrations.[1] Food allergens such as milk, egg, and peanut have been evaluated in the ongoing clinical trials. Administration of allergens in the epicutaneous tissue is known as EPIT and is associated with improved safety, as there are reduced chances of the allergen reaching the vasculature.[2] Efficacy for aeroallergens (Grass pollen) and a trend toward improvement for cow's milk food allergy has been observed in EPIT. In ILIT, the allergens are injected into the inguinal lymph nodes and has been evaluated for aeroallergens (birch, grass, dust mites, cat, and dog allergy), bee venom, and food allergen (ovalbumin).[2],[3],[4] The main advantage of ILIT is the reduced number of doses to obtain clinical efficacy.

Newer formulations in AIT include – allergoids, peptides, and recombinant allergens. Allergoids have the property of,[5] improved safety due to the reduction of B-cell epitopes (thereby, reduced immunoglobulin E [IgE] binding) and retained efficacy as the T-cell epitopes are retained. Thus, the advantages of allergoids include improved safety profile and furthermore, being depot preparations, they are associated with a convenient dosing schedule. Allergoids (studied for house dust mite and pollen allergens) are being used in clinical practice and contribute to approximately 50% of the total SCIT preparations in the European countries.[6] Peptide immunotherapy is the administration of short peptides which can actively interact with the T-cell epitopes and was recently unsuccessfully studied for cat allergy.[7] Recombinant major allergens from birch and grass pollen have been successfully evaluated for AIT.[8] However, the development of recombinant allergens is currently being kept on hold as they did not prove to be clinically significant as compared to extract-based immunotherapy. Furthermore, regulatory and quality requirements are additional considerations.

Finally, the addition of omalizumab (anti-IgE) to AIT although not an approved indication has been utilized to reduce the adverse events of AIT, especially in cases of venom and food immunotherapy. Furthermore, omalizumab has also been utilized to control the disease before initiation of AIT.[9]

The future holds promising therapies being evaluated for AIT in clinical studies. Currently, only the allergoids are being utilized in clinical practice. The status of other approaches would be understood in the coming years. Research on further modalities and availability of new modalities in clinical practice may improve patient outcomes.

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Conflicts of interest

There are no conflicts of interest.

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