Mechanisms and Biomarkers Related to Sublingual and Subcutaneous Immunotherapy

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Clinical and immunologic tolerance are hallmarks of successful allergen sublingual immunotherapy (SLIT) in carefully selected patients. Clinical benefit such as reduced symptoms, pharmacotherapy intake and improvement of quality of life persists following discontinuation of treatment. Successful SLIT is associated with suppression of allergic inflammatory cells such as mast cells, eosinophils and basophils. Furthermore, SLIT immunomodulate allergen-specific Th2 responses in the tissue (target organ) and the periphery. The immunologic tolerant state induced following SLIT is associated with induction of allergen-specific IL-10+, TGF-β+ and FoxP3+ regulatory memory T cells. B cell responses, in particular IgG₄-associated blocking antibodies and IL-10+ regulatory B cells, are also induced following allergen immunotherapy (AIT). These events are followed by suppression of allergen-specific proliferation Th2 responses and results in immune deviation from a T helper 2-type to T helper 1-type response. Despite gaining insight into the mechanisms of SLIT, to date there are no validated biomarkers that are predictive of the clinical response to treatment. This review reports recent advances in understanding mechanisms of SLIT and outlines relevant potential biomarkers for monitoring allergen-specific immunotherapy.
Relevant references:


4. first study to demonstrate long term clinical effects of AIT.


7. first study to validate a relationship between blocking antibodies and clinical response.


10. first study to demonstrate long term clinical effects of SLIT.


39. ** First study to propose that stabilin 1 (STAB1) and the complement component C1Q representing a tolerogenic signature of DCs in SLIT treated patients

41. First study to propose to show IL-27 supresses TH2 allergic responses


49. First study to demonstrate local Ig4 antibody inhibit IgE-facilitated allergen binding and presentation.


60. •• First study to report a novel solid phase assay for measuring serum inhibitory blocking activity in AIT treated individuals.


