“Strategies For Therapy and Prevention Of Allergy”

Professor Rudolf Valenta
Medical University of Vienna, Austria
www.meduniwien.ac.at/allergy-research-christian-doppler
www.meduniwien.ac.at/allergy-research-program

Abstract
The production of IgE antibodies against per se harmless antigens (i.e., allergens) is the hallmark of allergy, a hypersensitivity disease affecting more than 25% of the population worldwide. The vast majority of symptoms in allergic patients is caused by the activation of immune cells by IgE-allergen immune complexes which results in allergic inflammation in various target organs such as the upper and lower respiratory tract, the skin, the gastrointestinal tract and in the worst case lead to life-threatening systemic anaphylaxis. In this presentation possible strategies for immune-modulation of IgE-mediated allergy will be discussed. First, it will be shown that the transfer of hematopoietic stem cells expressing allergens leads to complete prevention of the development of allergic sensitization caused by tolerance at the antibody and cellular level in a murine model (1). Second, it will be demonstrated that allergen-specific IgG antibodies can prevent the development of allergic sensitization and also reduce allergic inflammation after sensitization has occurred (2, 3). Third, the potential of selective extracorporeal depletion of IgE using a non-anaphylactic ligand for IgE will be discussed (4). Finally, a robust concept for safe and side effect-free allergen-specific therapeutic vaccination based on non-allergenic allergen-derived peptides fused to viral carrier proteins will be presented which is applicable to the most common allergen sources (5, 6, 7). Using targeted immune- intervention it should be possible to generate a panel of biologics which not only ameliorate the symptoms of allergy but also target the underlying causes of allergic diseases and thus should enable successful therapy and prophylaxis of allergy.

Selected Publications