TOWARDS A NON-ALLERGENIC PEPTIDE MIX CONTAINING THE T CELL EPITOPES OF RELEVANT HOUSE DUST MITE ALLERGENS

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Purpose: Der p 1, Der p 2, Der p 5, Der p 7, Der p 21 and Der p 23 are the most important house dust mite (HDM) allergens. The aim of this study was to define a mix of non-allergenic T cell epitope-containing peptides of these allergens for tolerance induction.

Methods: According to the amino acid sequences of these allergens, we synthesized 33 overlapping peptides covering the complete sequences of Der p 1, 2, 5, 7, 21 and 23 on a peptide synthesizer. The peptides were tested for IgE reactivity with sera from HDM allergic patients in ELISA and dot blot assays. PBMCs from HDM allergic and non-allergic individuals were incubated with the synthetic peptides and T cell proliferation was measured using a CFSE dilution-based assay.

Results: The peptides could be purified in large amounts. They lacked secondary structure but most of them remained soluble in physiological buffers. Dot blot and ELISA assays indicated that only one peptide showed strong IgE reactivity and thus that they are non-allergic. Preliminary testing of the peptides for their ability to stimulate T cells showed the presence of relevant HDM T cell epitopes in the peptides.

Discussion: Our results indicate that it may be possible to identify a hypoallergenic T cell epitope-containing peptide mix of the clinically relevant HDM allergens.

Conclusions: The determination of the T cell epitopes of HDM allergens will be important for tolerance induction.