Development of Recombinant Antibodies Against European House Dust Mite Major Allergens

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Serological allergy diagnostics measuring allergen-specific IgE levels are highly important in clinical allergy diagnosis. However, quantitative serological diagnostic tests have drawbacks in reproducibility [1]. For reliable systems, calibration reagents are required. Considering the importance, this study aimed to produce chimeric antibodies imitating natural human antibodies of IgE isotype against prevalent indoor allergens *Dermatophagoides pteronyssinus* components Der p 2 and Der p 23.

For this purpose, previously developed hybridomas secreting monoclonal antibodies (MAbs) against Der p 2 and Der p 23 were used. To choose one MAb out of four against Der p 2, characterisation using immunochemical methods was performed. MAbs were tested for their ability to recognise allergens in enzyme linked immunosorbent assay (ELISA) and Western blot (WB) formats. MAbs 4G7, 10C12 and 5E12 recognised natural and recombinant Der p 2 and Der f 2. On the other hand, MAb 2B4 only recognised Der p 2. Hybridomas producing MAb 4G7 against Der p 2 and MAb 18E4 against Der p 23 were chosen to construct their chimeric counterparts. Their variable sequences were determined by sequencing. MAbs' light and heavy variable chains were cloned into pFUSEss vectors and fused with human immunoglobulin light and heavy chain constant regions. Vectors were then co-transfected into cultures of mammalian cell lines for expression of full-length chimeric antibodies.

This study revealed the possibilities of using hybridomas producing MAbs against Der p 2 and Der p 23 to create tools for standardisation of allergy diagnostic systems.

The authors declare that they have no conflict of interest in relation to the above work.
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[1] Szecsi PB, Stender S. Comparison of Immunoglobulin E Measurements on IMMULITE and ImmunoCAP in Samples Consisting of Allergen-Specific Mouse-Human Chimeric Monoclonal Antibodies towards Allergen Extracts and Four Recombinant Allergens. Int Arch Allergy Immunol. 2013;162(2):131-134. doi:10.1159/000353276