Molecular Characterization of Allergens of *Cladosporium herbarum* and *Alternaria alternans*

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Key Words

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The two moulds, *Cladosporium herbarum* and *Alternaria alternans* are major worldwide causes of fungal allergies. To improve our knowledge about the identity and the immunological properties of their allergens, an attempt was made to clone and sequence them. At the present time, the seven allergens listed in table 1 have been cloned by immunological screening with patients' IgE of cDNA expression libraries [1]. The allergens were sequenced, expressed as recombinant non-fusion proteins in *Escherichia coli* [1], and one of them, Cla h 3, was purified to homogeneity by standard protein chemical techniques.

Although the sequences of some of the major allergens of the two moulds are not yet known, we would like to present some generalizations that are based on the seven known allergens. (1) These allergens are usually not the most abundant ones in fungal extracts. (2) None of the fungal allergens presented here are homologous to any previously known non-fungal allergens. (3) All fungal allergens found here are cytoplasmic household proteins that lack glycosylation and are rather well conserved in evolution.

The recombinant non-fusion proteins corresponding to all seven allergens show exactly the same electrophoretic mobility as the natural allergens. The small minor allergens of 11 kD are the mould homologues of the highly conserved human ribosomal protein P2 which is a major auto-antigen recognized by lupus erythematoses patients. This raises the possibility that at least in some patients an autogeneious stimulation of the allergic response might occur, as has previously

been discussed for profilin, a minor allergen of birch pollen [2]. This possibility is now being investigated in our laboratory.

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The allergens listed in the table were identified by IgE Western blotting of serum from a total of 194 patients onto protein extracts of the two moulds that had been grown in our laboratory [1]. All cloned allergens were sequenced, expressed as recombinant non-fusion proteins and compared in IgE Western blots with the natural proteins. The biological (enzymatic) functions listed in parentheses were deduced only by the (very high) homology with previously known sequences. The function of YCP4, which was found by genomic sequencing of baker's yeast, is still unknown. ALDH = Aldehyde dehydrogenase; red. = reduced.

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