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Allergological profil of Basidiomycete sensitized subjects

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Basidiomycetes are morphologically the most complex of all the fungal classes and include mushrooms, puffballs, rusts, smuts and bracket fungi. Spores of *Basidiomycetes* are abundantly found in the outdoor air in many parts of the world. Although positive skin tests, specific serum IgE's and bronchial reactivity have been demonstrated in sensitive subjects, the significance of *Basidiomycetes* as respiratory allergens is not established. Recently it has been demonstrated, that the sensitization to *Basidiomycetes* in Europe and in the USA is comparable to that of well-known *fungi imperfecti* such as *Alternaria*, *Cladosporium*, *Fusarium* and *Aspergillus*. In the present study, we sought to examine whether sensitization to 3 common mushrooms (*Boletus edulis*, *Coprinus comatus*, and *Pleurotus ostreatus*) can be found in subjects referred to an outpatient allergy clinic. We evaluated clinical symptoms of these individuals and identified allergens of these mushrooms by immunoblotting.

Nineteen of 380 subjects (5.0%) with a history of respiratory allergy reacted to at least one of the basidiomycete extracts prepared in our laboratory. 15/19 of these subjects had asthma and 4/19 had rhinitis. Most individuals had an atopic background and 12/19 (63%) were sensitized to molds. SDS-PAGE/ α IgE immunoblots of *Pleurotus ostreatus* revealed 2 reactive bands at 30 and 80 kD, 7 bands (29–110 kD) with *Coprinus comatus* and several bands (34–50 kD) with *Boletus edulis* using pooled sera from 6 skin test-positive subjects. Between *Boletus edulis* and *Coprinus comatus* some putative common allergens were found at 26, 65 and 83 kD. In order to evaluate a cause-and-effect relationship between sensitization to *Basidiomycetes* and respiratory allergy, we are currently performing nasal challenge tests by anterior rhinomanometry. To date, 10 subjects (5 *Pleurotus ostreatus* spores skin test positive and 5 negative) have been challenged with 3 different *Pleurotus ostreatus* concentrations (0.1, 1.0 and 10.0 mg/ml). Following the base-line measurement with saline, 40–50 μ l of the test solution was sprayed into the nostril in 15 minutes intervalls beginning at the lowest concentration. Whereas neither of the 5 controls did react subjectively, nor objectively with any of the concentrations of *Pleurotus ostreatus* extracts, all of the *Pleurotus ostreatus* skin test-positive patients experienced subjective symptoms and a total nasal occlusion at various test concentrations.

Our preliminary data demonstrate, that *Basidiomycetes* may be relevant aeroallergens and may cause respiratory allergies. As demonstrated by immunoblots, *Boletus edulis*, *Coprinus comatus*, and *Pleurotus ostreatus* contain multiple allergens. Further efforts are directed at characterization of major allergenic components of *Boletus edulis*, *Coprinus comatus*, and *Pleurotus ostreatus* via molecular biology methods. The cDNA of a putative *Coprinus comatus* allergen (Cop c 1) has been isolated and is being characterized.