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Titel des Beitrags: Timothy Grass (textitPhleum pratense L.) Pollen as Allergen Carriers and Initiators of an Allergic Response

Abstract: Contrary to indoor allergen exposure (e.g. house dust mite), there is no reliable quantitative association between pollen exposure and symptoms of allergic diseases. Therefore we studied localization and release of major allergens from timothy grass (Phleum pratense L.) pollen using different methods and pollen grain sources. Localization of major allergens Phl p 5 and Phl p 1 was visualized by field emission scanning electron microscopy after anhydrous fixation and immunogold silver staining in a three–dimensional reconstruction; Phl p 5 was found in the cytoplasm and on the exine, Phl p 1 in the intine. No allergens were found inside the starch granules. Allergen liberation from pollen grains was studied in vitro under physiological conditions (30 min, 37°C) at pH 6.0, 7.4 and 9.0. Besides total protein measurements in the supernatant, major allergens were determined by immunoblot, Phl p 5 was quantitated by ELISA. There were striking differences in total protein and major allergen release between freshly collected and commercially available grass pollen grains as well as among freshly collected pollen between rural meadows and areas near high–traffic roads. There was a significantly different release of total protein being lowest in supernatants from commercially available pollen grains (rural/traffic vs. commercial, ptraffic>commercial, p<0.005). Therefore, allergen bioavailability seems to be an important parameter.
in order to establish reliable dose–response relationships for the outdoor allergen response. Pollen grains incubated in aqueous protein–free buffer solution were also found to secrete significant amounts of eicosanoids namely prostaglandin E2 and leukotriene B4. Pollen grains thus do not act only as allergen carriers but also might have important implications on early events as initiators of allergy.

Stichworte:
Grass pollen allergens; Localization; Immunoelectron microscopy; Phl p 5 release; Air pollution

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