

NOVEL CANDIDATE ALLERGENS in STORED PRODUCTS MITES (ACARI: ASTIGMATA): COMPARISON of DIGESTIVE ENZYMES

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Mites are known as causal agents of bronchial asthma, allergic rhinitis and conjunctivitis among food industry workers as well as in urban populations. Mites inhabit stored grain commodities and contaminate them by faeces containing digestive enzymes as the allergenic substances. Among them, amylases and proteases were reported as major allergens, the other enzymes remaining to be investigated and tested for allergenicity in further research. The presented study concentrates on novel candidate allergens in the mite species *Acarus siro* (Linnaeus, 1758), *Lepidoglyphus destructor* (Schränk, 1781) and *Tyrophagus putrescentinae* (Schränk, 1781). They are widespread pests, which infest about 50 % of the grain samples collected in central Europe.

Generally, the studied mite species showed significant quantitative differences in the spectrum of their digestive enzymes. The activities of α -amylase, α - and β -glucosidases, β -galactosidase, trehalase, lichenase and cellulase were evaluated and compared using panel of a saccharidic substrates. The proteolytic activities were investigated by means of 1) low-molecular weight chromogenic substrates and protein substrates, 2) specific inhibitors directed against particular protease classes.

Based on the obtained data, a relationship between the variation in biochemical profile of the digestive apparatus and biology of the storage-products mites was suggested. Further, the total levels of enzyme activities in particular *Astigmata* species indicate the novel candidate allergens and their producers. The potential of digestive enzyme inhibitors in transgenic seeds as well as the use of the predatory mite *Cheyletus eruditus* to eliminate mite populations and allergen production is discussed.

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