

The POTENTIAL RISK of STORAGE MITES' ALLERGENS CONTAMINATION of GRAIN in CZECH REPUBLIC

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It is well documented that human food infested by mites may cause anaphylaxis. To establish the mite "allergy-risk threshold" in stored grain, we asked how many mites cause allergenic reaction? In literature we found that exposure to more than 100 mites/g⁻¹ dust increases the risk of sensitisation, and 500 mites/g⁻¹ dust increases the risk of acute asthma. Anaphylaxis was observed in concentrations of mites: 5 000 - 140 000 mite/g⁻¹ food. Usually 1 kg of grain contains about 9.64 g of dust. Based on the previous data, we estimate the following three levels of "allergy-risk threshold" (ART): (i) 1000 mites/kg⁻¹ grain represents risk of sensitisation, (ii) 5000 mites/kg⁻¹ grain risk of acute asthma, and (iii) 500 000 mites/kg⁻¹ grain risk of anaphylaxis.

We analysed 370 samples of stored grain from Czech Republic. The total number of mites was 116,655. The most abundant species were: *Tydeus interruptus*, *Acarus siro*, *Tarsonemus granarius*, *Tyrophagus putrescentiae*, *Lepidoglyphus destructor*, and *Cheyletus eruditus*. The distribution of mites abundance was geometric. The mean density per sample was 308 mites per 1 kg grain. Mites were present in 64% of all samples. But the number of samples above the "allergy-risk threshold" was lower: 4% of samples could cause the risk of sensitisation (first ART level), and 0.1% of samples could cause acute asthma attacks (second ART-level).

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