

MICROBIAL CONTAMINATION AND IMMUNOLOGIC REACTIVITY OF STORED OATS

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Bulk samples of oats were obtained from Alabama where a cluster of cases of organic dust toxic syndrome occurred in workers who shoveled approximately 800 bushels of oats from a poorly ventilated storage bin. Airborne dusts were obtained from the samples by acoustical vibration in a laboratory dust generator. Microbial contamination of the airborne dusts, as measured by standard dilution plating techniques, revealed 1.4×10^5 colony forming units per cubic meter of air (CFU/m³) of total viable bacteria, 1.5×10^3 CFU/m³ of gram-negative bacteria, 1.8×10^5 CFU/m³ of thermophilic bacteria, and 8.3×10^4 CFU/m³ of fungi. The most common fungi isolated from the dust included *Alternaria*, *Aspergillus*, *Cladosporium*, *Penicillium*, and *Scopulariopsis* species. Analysis of the generated airborne dust for gram-negative bacterial endotoxins resulted in the detection of 325.71 Endotoxin Units per milligram of dust (EU/mg). The endotoxin contamination of the bulk oats was 122.66 EU/mg. An extract of the bulk sample consumed human serum complement *in vitro* in a dose-dependent fashion, indicating the inflammatory potential of the material. Sera from the exposed workers were examined for antibodies against the extract, against antigens from the predominant fungi, and against standard antigens associated with hypersensitivity pneumonitis. Evidence of exposure (specific antibodies) was determined, although symptomatic and asymptomatic workers could not be differentiated. Stored oats provided a source of respiratory exposure to microbial antigens and to immunoreactive materials.

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