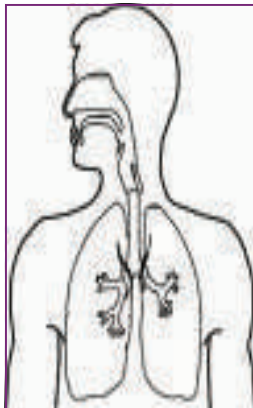


Medical Research Abstracts



Stachybotrys chartarum, Trichothecene Mycotoxins, and Damp Building-Related Illness: New Insights into a Public Health Enigma.

Enigma. Pestka JJ, Yike I, Dearborn DG, Ward MD, Harkema JR., Center for Integrative Toxicology. Toxicol Sci. 2007 Nov 15 [Epub ahead of print]

Damp building-related illnesses (DRBI) include a myriad of respiratory, immunologic and neurologic symptoms that are sometimes etiologically linked to aberrant indoor growth of the toxic black mold, *Stachybotrys chartarum*. Although supportive evidence for such linkages are limited, there are exciting new findings about this enigmatic organism relative to its environmental dissemination, novel bioactive components, unique cellular targets and molecular mechanisms of action which provide insight into the *S. chartarum*'s potential to evoke allergic sensitization, inflammation and cytotoxicity in the upper and lower respiratory tracts. Macrocyclic trichothecene my-

cotoxins, produced by one chemotype of this fungus, are potent translational inhibitors and stress kinase activators that appear to be a critical underlying cause for a number of adverse effects. Notably, these toxins form covalent protein adducts in vitro and in vivo and, furthermore, cause neurotoxicity and inflammation in the nose and brain of the mouse. A second *S. chartarum* chemotype has recently been shown to produce atranones - mycotoxins that can induce pulmonary inflammation. Other biologically active products of this fungus that might contribute to pathophysiologic effects include proteinases, hemolysins, beta-glucan and spirocyclic drimanones. Solving the enigma of whether *Stachy-*

botrys inhalation indeed contributes to DRBI will require studies of the pathophysiologic effects of low dose chronic exposure to well-characterized, standardized preparations of *S. chartarum* spores and mycelial fragments, and, co-exposures with other environmental cofactors. Such studies must be linked to improved assessments of human exposure to this fungus and its bioactive constituents in indoor air using both state-of-the-art sampling/analytical methods and relevant biomarkers.

PMID: 18007011 [PubMed - as supplied by publisher]

Immunohistochemical and immunocytochemical detection of SchS34 antigen in *Stachybotrys chartarum* spores and spore impacted mouse lungs.

Rand TG, Miller JD, Department of Biology, Saint Mary's University, Halifax, NS, Canada, B3H 3C3 Mycopathologia. 2007 Nov 29 [Epub ahead of print]

The purpose of this study was to evaluate the distribution of a 34 kD antigen isolated from *S. chartarum* sensu lato in spores and in the mouse lung 48 h after intra-tracheal instillation of spores by immunohistochemistry. This antigen was localized in spore walls, primarily in the outer and inner wall layers and on the external wall surfaces with modest labelling observed in cytoplasm.

Immuno-histochemistry revealed that in spore impacted mouse lung, antigen was again observed in spore walls, along the out-

side surface of the outer wall and in the intercellular space surrounding spores.

In lung granulomas the labelled antigen formed a diffusate, some 2-3x the size of the long axis of spores, with highest concentrations nearest to spores. Collectively, these observations indicated that this protein not only displayed a high degree of specificity with respect to its location in spores and wall fragments, but also that it slowly diffuses into surrounding lungs.

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