

Research concludes vitamin D may treat or prevent allergy to common mold

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Research conducted by Dr. Jay Kolls, Professor and Chair of Genetics at LSU Health Sciences Center New Orleans, and colleagues, has found that vitamin D may be an effective therapeutic agent to treat or prevent allergy to a common mold that can complicate asthma and frequently affects patients with Cystic Fibrosis. The work is scheduled to be published online August 16, 2010, ahead of the print edition of the September 2010 issue of the *Journal of Clinical Investigation*.

The environmental mold, *Aspergillus fumigatus*, is one of the most prevalent fungal organisms inhaled by people. In the vast majority, it is not associated with disease. However, in asthmatics and in patients with Cystic Fibrosis (CF), it can cause significant allergic symptoms. Up to 15% of CF patients develop a severe allergic response called Allergic Bronchopulmonary Aspergillosis (ABPA). Since the mold is so common, the researchers wanted to identify the factors that determine why only a subset of patients develop the allergy and what factors regulate tolerance or sensitization to the mold resulting in the development of ABPA. To gain insights, the group studied two groups of patients with CF. Both groups were colonized with *A. Fumigatus*, but only one had ABPA.

The researchers focused on Th2 cells—the hormonal messengers of T-helper cells that produce an allergic response. They found that a protein called OX40L was critical in driving Th2 responses to *A. fumigatus* in the CD4+T cells isolated from patients with ABPA and that this group had a much greater Th2 responses to *A. Fumigatus*. The CD4+T cells from the group of patients that did not have ABPA had higher levels of the proteins, FoxP3 and TGF- β , critical to the development of allergen tolerance. The researchers discovered that heightened Th2 reactivity in the ABPA group correlated with a lower average blood level of vitamin D.

"We found that adding vitamin D not only substantially reduced the production of the protein driving an allergic response, but it also increased production of the proteins that promote tolerance," notes Dr. Jay Kolls, Professor and Chair of Genetics at LSU Health Sciences Center New Orleans.

According to the National Institutes of Health, Cystic fibrosis (CF) is the most common, fatal genetic disease in the United States. About 30,000 people in the United States have the disease. CF causes the body to produce thick, sticky mucus that clogs the lungs, leads to infection, and blocks the pancreas, which stops digestive enzymes from reaching the intestine where they are required in order to digest food. It is estimated that about 70,000 people worldwide have the disease.

Recent research has suggested that low levels of vitamin D may contribute to heart disease, a higher risk of diabetes, certain cancers, and depression as well as asthma, colds, and other respiratory disorders.

"Our study provides further evidence that vitamin D appears to be broadly associated with human health," notes Dr. Jay Kolls, Professor and Chair of Genetics at LSU Health Sciences Center New Orleans. "The next step in our research is to conduct a clinical trial to see if [vitamin D](#) can be used to treat or prevent this complication of asthma and [Cystic Fibrosis](#)."

Provided by Louisiana State University Health Sciences Center

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