

## **The Role of Complement in Immune Responses to Mold Exposure**

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Adverse health effects following prolonged exposure to indoor moisture damage related microbes, such as mold, are a common public and occupational health concern worldwide. The immunological mechanisms behind the symptoms related to exposure are incompletely understood, and measuring the immunological changes in exposed individuals remains a challenge.

Gradual sensitization often experienced by exposed individuals suggests that the adaptive immune system plays a part in the development of moisture damage related symptoms and diseases. Our studies have shown that individuals exposed to moisture damage related microbes in their working environment have elevated levels of spore specific IgG class antibodies, and that exposed individuals exhibit higher antimicrobial complement classical pathway activity. Preliminary results also show that exposed individuals have higher concentrations of circulating immune complexes (CIC) in their serum, and that significantly elevated CIC concentrations are more frequent compared to a reference group. These results indicate that antibody production, formation of immune complexes and complement activity are involved in the development of moisture damage related symptoms and sensitization. Immune complexes formed by microbial antigens and antibodies activate the complement cascade, which in turn mediates both innate and adaptive immune system responses.

Our current studies investigate the relationship between the components of the complement system, moisture damage exposure and related symptoms. Our primary interest lies in complement components C3a and C5a, which are powerful chemotactic agents that play an important role in the formation of an inflammatory response. In addition to complement components, we are also interested acute phase effectors such as C-reactive protein, as they have a direct stimulating effect on the complement classical pathway.