

Title of Research:

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Study on the mechanism of sick building syndrome and development of risk assessment system utilizing *Drosophila*

Principal Investigator:

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Collaborators:

Summary of Research:

The aim of this study is to reveal the mechanism of sick building syndrome and develop risk assessment system, utilizing *Drosophila*. We exposed *Drosophila* to formaldehyde gas or xylene gas for analyzing proteins of which concentrations were changed by exposing. The 2-D electrophoresis and quantitative RT-PCR of *Drosophila* individual revealed that the expression of triose phosphate isomerase, one of sugar metabolism enzymes, was enhanced by xylene treatment. We analyzed the relation between exposure period and expression level of triose phosphate isomerase. The quantitative RT-PCR of all enzymes involved in glycolysis and gluconeogenesis demonstrated that the expression of the glucose metabolism-related enzymes varies greatly by xylene exposure. In contrast, the expression of α -actinin and actin 5C, were reduced greatly by formaldehyde treatment. The reduction was largest at the early exposure to formaldehyde. These demonstrated that different causative agents affected the expression of different proteins. Therefore, the sick building syndrome is likely to develop at a different mechanism by causative agent.

Timeline:

March 1, 2015 – February 29, 2016

Topics:

The 3rd Research Meeting of the New LRI of Japan Chemistry Industry Association, Tokyo, August, 2014. "Study on the mechanism of sick building syndrome and development of risk assessment system utilizing *Drosophila*", Poster presentation.