

Sensitization to booklice (*Liposcelis bostrichophila*) among adult asthmatic patients: most common household insect in Japan

Yuma Fukutomi^{1,2}, Yuji Kawakami³, Masami Taniguchi¹, Akemi Saito¹, Azumi Fukuda³, Hiroshi Yasueda¹, Takuya Nakazawa¹, Maki Hasegawa¹, Hiroyuki Nakamura², Kazuo Akiyama¹

1 Clinical Research Center for Allergy and Rheumatology, Sagamihara National Hospital

2 Department of Environmental and Preventive Medicine, Graduate School of Medical Science, Kanazawa University

3 Laboratory of Environmental Science, FCG Research Institute, Inc.

Abstract

Background: Some entomologic research into dust samples from houses in Japan has shown that booklice (*Liposcelis bostrichophila*, BL) are the most frequently detected insect among all detectable insects, present at a frequency of about 90% in dust samples. A few domestic studies have reported that some Japanese pediatric asthma patients are sensitized to this insect. However, the prevalence of sensitization to BL among Japanese adult allergic asthma patients, its allergenicity and its cross-reactivity with other insects are unknown.

Methods: The allergenicity of BL and its cross-reactivity with other insects were examined in 185 allergic asthma presented patients who visited Sagamihara National Hospital between June 2007 and May 2009 using skin tests, ELISA and FEIA inhibition tests. Extracts were prepared from whole bodies of BL, Indian meal moth (*Plodia interpunctella*, IM), cigarette beetle (*Lasioderma serricorne*, CB), German cockroach (*Blattella germanica*, GC), midge (*Chironomus yoshimatsui*, MI), mosquito (*Cullcidae sp.*, MO), house fly (*Musca domestica*, HF) and house dust mite (*Dermatophagoides pteronyssinus*, DP), and the wing of a silk moth (*Bombyx mori*, SM). An intradermal test using 1:1000 dilutions of BL, IM, CB and GB extracts, and ELISA to detect serum-specific IgE's to these insects were performed. A specific IgE level of greater than 0.7 units/mL was regarded as positive. IgE-inhibition analyses using BL extracts as the solid phase and IM, CB, GC, HF, DP and SM extracts as inhibitors were also performed in BL-IgE positive patients.

Results: The prevalences of positive intradermal test reaction to BL, IM, CB and GC were 42, 37, 29 and 11% respectively. The prevalence of BL-IgE positive patients was 18%, which was greater than that of GC but smaller than that of SM (prevalences of positive reaction to IM, CB, GC, MI, MO, HF and SM: 11, 10, 10, 12, 7, 14 and 23%, respectively). Inhibition analyses in 33 BL-IgE positive patients showed that, although IgE reactivities to BL in 22 patients was inhibited by more than 50% by any of the other insects, those in 11 patients were not inhibited by any of the other insects or DP.

Conclusion: Specific sensitization to BL not inhibited by other insects was observed in some Japanese allergic asthma patients. These data indicate that BL is an important independent respiratory allergen for Japanese asthmatic patients.