Improving the Method of Detecting Allergens in Food

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Abstract

Previously, we developed a mouse model of anaphylaxis inducible within 9 days by food samples, and proposed a standard concept to quantify the intensities of the anaphylactic responses reflected by the fall of blood pressure. In the present paper, we describe several improvements over our previous method.

In the original paper, because of the intra venous administration for the elicitation of the anaphylaxis, only water-soluble fractions were used in the samples. For this reason, samples were extracted by three kinds of buffers, all at different pH levels. In order to obtain more accurate information as to the detection of allergens contained in whole food samples including water-insoluble fractions, preparation of the samples was changed this time to a single physical extraction in saline. Accordingly samples containing water-insoluble matters were administered intra peritoneally in both sensitization and challenge. Freund's incomplete adjuvant (FIA) was found to be useful in the sensitization. Using the improved method, allergic matters contained in food samples, not only natural, but also processed, could be examined. As a primary experiment, it was demonstrated that mice sensitized with 0.5 mg of boiled egg-white were elicited anaphylaxis by lysozyme as shown in Fig.1. This indicated that our method could detect 1.7 µg of lysozyme contained as an allergen in egg-white.

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