学 位 論 文 の 要 旨

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主論文の題名

A Murine Model of Food Allergy by Epicutaneous Adjuvant-Free Allergen Sensitization Followed by Oral Allergen Challenge Combined with Aspirin for Enhanced Detection of Hypersensitivity Manifestations and Immunotherapy Monitoring

主論文の要旨

Food allergy is one of the major existing health problems, but no effective treatment is available. In the current work, a murine model that closely mimics pathogenesis of human food allergy and its quantifiable diagnostic parameter design, even for mild hypersensitivity reactions, were established. BALB/c mice were epicutaneously sensitized with 1 mg chicken egg ovomucoid (OVM) or cow's milk casein, free of adjuvants, for two consecutive weeks. Eleven days later, allergen-specific IgG1 and IgE in serum were measured by ELISA. On day 25, 20 mg OVM or 12 mg α-casein was administered orally, and allergic reactions such as the fall in rectal temperature, symptom scores during 90–120 min, serum mast cell protease-1 and cytokine levels were monitored. The detection of mild allergic reactions due to adjuvant-free allergen sensitization and oral allergen challenge routes was amplified by the combination of oral allergen and aspirin administration simultaneously or within 15–30 min before an allergen challenge. Quantification of the maximum symptom score and the frequency of symptoms during the monitoring period improved evaluation accuracy of food allergy signals. Based on these results, efficacy of casein oral immunotherapy for cow's milk allergies, which are generally difficult to detect, was monitored adequately.