

(別紙) 研究成果の概要 (英文)

Title of research project	Studies on fruit allergen components associated with a risk of severe allergies
Research project number	(1807)
Research period	FY 2018 – 2019
Name of principal re- search investigator (PI)	Nobuyuki Maruyama

Abstract/Summary

Food allergies lead to various clinical manifestations ranging from severe systemic to local oral symptoms. Epidemiological surveys have revealed the need for labeling requirements or recommendations for foods with a high allergy causing risk or frequency. Recently, the relationship between causative component of food allergies, and the associated clinical symptoms are becoming well defined. However, reports on allergens present fruit remain limited. The study assessed the allergen components of fruits known to frequently cause allergies with immediate severe symptoms, including peach, apple, melon, watermelon, banana, and kiwi. Pediatric patients were enrolled in the study and further divided into the groups; namely a) patients with severe symptoms, and b) patients with local oral symptoms. The allergen components of fruits were either purified from the natural sources or synthesized by recombinant technology. The levels of specific IgE antibodies produced against the allergen components were measured in the serum of patients using ELISA or ImmunoCAP method. In peach and apple allergic patients, sensitization to gibberellin-regulated protein in patients with immediate severe allergy was found to be statistically higher than in those with local oral symptoms. In melon and watermelon allergic patients, sensitization to profilin was frequent in those with oral local symptoms. Conversely, among patients allergic to banana, sensitization to thaumatin-like protein and β -1,3-glucanase was often observed in those with severe systemic allergy. These results suggest that the association of allergen components with clinical symptoms differs depending on the fruit species. Therefore, these findings on the allergen components responsible for the manifestation of clinical symptoms in fruit allergic patients are significant. These findings on the allergen components responsible for severe symptoms manifestation are expected to have a major impact, for example, on establishment of new labeling requirements or recommendations for foods with allergic components and on the development of new food risk assessment methods.

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1 . List of papers published on the basis of this research

None

2 . List of presentations based on this research

Relationship between sensitization to allergen components and symptoms in banana allergy; Nobuyuki Maruyama, Kyotan Syo, Sakura Sato, and Motohiro Ebisawa

The 56th Annual Meeting of Japanese Society of Pediatric Allergy and Clinical Immunology, International Pediatric Allergy Symposia

Chiba (2019) Nov. 2

3 . The number and summary of patents and patent applications

None

4 . Others (awards, press releases, software and database construction)

None