

2<sup>nd</sup> International Conference on **Advances in Neonatal and Pediatric Nutrition**  
&  
15<sup>th</sup> International Congress on **Advances in Natural Medicines, Nutraceuticals & Neurocognition**  
July 08-10, 2019 Berlin, Germany

## **Pack cooking helps the patients who have food allergy at the time of disaster**

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The huge disaster like as the Great East Japan Earthquake destroyed essential utilities and a lot of people were forced to live in shelters after evacuation. They have to stay at the temporary shelters for a while and have to take ration foods for refugees until they leave there. However, the refugees with food allergy can not eat rations because no allergen-free foods are supplied. According to the reports, the caregivers of children with food allergies were confronted with difficulties to get allergen-free foods during the evacuation life after the Great East Japan Earthquake and about 5% food allergic children developed the allergic symptoms by the accidental ingestions of foods including the allergens. The ration foods without the allergens were developed after the Great East Japan Earthquake in 2011, however, they are insufficient to cope with the entire food allergens.

After the Great East Japan Earthquake, the pack cooking have been focused in Japan. That is to say, ingredients are packed in a heat resistance polyethylene bag tie the bag tightly and boil the bag by a portable gas stove. The pack cooking needs less water, namely the water for boiling the bags can be used repeatedly and the cooked foods are able to eat directly without plates. Since kinds of menu are varied in each bag, the pack cooking is convenient to make some kinds of food in one pot. Thus these features of the pack cooking make the technique useful to help refugees with food allergy. Moreover, it can also help infants and old persons who need soft food.

From these backgrounds, we investigated whether the pack cooking was available for preparing the allergen-free foods. Firstly, the recipes of pack cooking without 7 specified raw materials for food allergy in Japan eggs, milk, wheat, peanuts, buckwheat, shrimps and crabs were designed. Secondary, the safety of the pack cooking was assessed. To estimate the contamination of the allergens while boiling, an allergen-free bag were boiled with bags contained 7 food allergens. Amount of the transferred allergens from the bags contained allergens to the allergen-free bag were estimated by ELISA. When the allergens were detected in the allergen-free bag the water to boil the packs were concentrated and measured allergens by ELISA. No allergens were detected in the water for boiling the pack, even though the trace amount of allergens were detected from the cooked foods. Chances of allergen contamination in boiling step were extremely low. From these results, the pack cooking is a good method to cook individual food for food allergen patients at the time of disaster.

## **Biography**

Naoko Okishima has completed her PhD at the age of 29 years from Tokushima University. She have the licence of Resisterd Dietitic in Japan. She is the lecturer of the Department of Health and Nutritional Science, Faculty of Human Health Science, Matsumoto University. Her main theme of research is food allergy. She speak about the support of food allergy patients at the time of disaster in this time, she have also measured Mal d 1 as the apple OAS allergen from Japanese apple cultivars. In addition, she provide education and training about allergic disease to the teachers and childminds who have to care allergic children.

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