

RESEARCH REPORT - No. 1408 FY 2014

Title of research project	Estimation of the daily intake of acrylamide in Japan
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【Abstract】

Objectives: The purpose of this study is to estimate the dietary intake of acrylamide based on a representative data of the acrylamide contents in food and food consumption in Japan, by using probabilistic modeling techniques.

Method: To estimate probabilistic distribution of acrylamide intake, data on acrylamide contents in foods in Japan were obtained from National survey as well as literatures. Based on acrylamide contents in various foods the arithmetic mean, median, minimum and maximum content were determined, and then theoretical distribution and its parameters were calculated. In order to estimate food consumption in Japanese population, individual food consumption data was obtained from the National health and nutrition survey in Japan 2014, then clarified issues regarding identification and calculation of amount of intake of food items relevant to acrylamide intake. Point estimate of dietary intake of acrylamide was performed for each relevant acrylamide containing foods, based on mean values of acrylamide contents and amount of food consumed by Japanese. Dietary intake of acrylamide was computed multiplying acrylamide contents in food by daily amount of the food consumption. Intake from each food were then combined to provide daily intake of acrylamide and the contribution of each food or food group.

Results and consideration: In majority of food groups the acrylamide content distribution was based on log-normal distribution, while coffee, roasted barely grains was based on normal distribution. Based on point estimate, the acrylamide intake was 0.21 to 0.23 μ g/kg of body weight per day. The main sources of dietary acrylamide intake was considered to be potato and potato products, coffee, roasted barely grains, and wheat products containing brown sugar. Our estimate is similar to those implemented in China and Hong Kong and lower than those in Europe and the United States. Although our estimate is interim, the difference from the other country is attributable to the difference in targeted age of population, food items used in estimations, as well as difference in consumption of foods including coffee, potato, and breads between the countries.

We estimated, in the present study, the probabilistic distribution of acrylamide intake in Japan partly specifying various uncertainties. In order to estimate the distribution of acrylamide intake in the whole population of Japan, therefore, an additional estimation needs to be conducted by use of estimation models with analysis of individual data from the National health and nutrition survey in Japan 2014, and with quantifying factors that affect acrylamide intake.