Reviewer’s report

Title: Variations in the estimated intake of acrylamide from food in the Japanese population

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Reviewer: Heinz Freisling

Reviewer's report:

In this article the authors aim to estimate within- and between-person variation in dietary acrylamide intake in Japanese adults. Since there is still considerable uncertainty whether acrylamide increases risk of cancer in humans, the topic of this manuscript is of considerable public health importance. The authors make use of unique and good quality data. The study is well designed and the manuscript is largely also well written.

I have the following comments.

The rationale for estimating within- and between-person variation in dietary acrylamide intake presented in the introduction could be improved. It is unclear for what purpose the usual mean acrylamide intake of an individual need to be estimated. This is usually only required in dietary counselling. To estimate usual intake for ranking of individuals in epidemiological studies, requirements for precision can usually be relaxed. Current evidence suggest that between 3-5 repeated short-term dietary assessment applications (e.g., 24-hour recalls or food records) are sufficient for such a purpose.

The authors may also clearly state in the aims of the study that within- and between-person variation in dietary acrylamide intake was estimated.

The sentence in lines 91-93 on page 5 starting with "The mean age was…" should rather be moved to the results section. More details on the study population would be warranted, such as age with SD or age range, BMI, smoking status, educational level, energy intake, intake of main food sources. This could be presented for example, by tertiles of crude acrylamide intake.
In Table 2, it would also be good to show results for a lower acceptable limits for ranking individuals according to their acrylamide intake. Possibly for r=0.5 and r=0.75. This could be shown as D4 and D5. It seems to be unfeasible to collect 15-19 days of food records in an epidemiological study.

The sentence in line 228-229 is not entirely clear. Maybe the word "precise" is missing and it should rather read "As such, it is necessary to choose a precise exposure assessment…".

I fully second the conclusion that there is a need for biomarkers of dietary acrylamide intake, however, maybe the authors may stress that a repeated assessment of these biomarkers would be desirable.

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An article of importance in its field

**Quality of written English**
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