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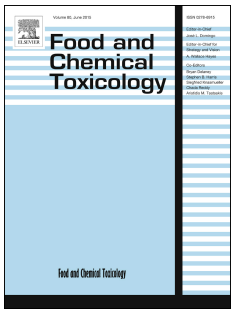

Strongly heated carbohydrate-rich food is an overlooked problem in cancer risk evaluation

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Title: Strongly heated carbohydrate-rich food is an overlooked problem in cancer risk evaluation

Abstract:

A cascade of compounds is produced when foodstuffs are heated at high temperatures but only a few of these compounds have been identified and quantified. In this study data are evaluated regarding differences in the micronucleus frequency of human erythrocytes (fMNs) in peripheral blood (a known biomarker of genotoxicity) in individuals that consumed either high- or low-heated food during a 4-day period. Concomitantly, acrylamide (aa) levels were measured in the food that the participants consumed. The obtained fMNs in this human study are compared with the fMNs in mice after comparable exposure levels of pure aa. The results of this comparison showed several hundred times higher fMNs in humans compared with mice. With an assumed linear correlation between an increased genotoxic effect and cancer, our data suggest that aa only represents a fraction of all carcinogenic compounds produced in heated carbohydrate-rich food. Consequently, our daily intake of carbohydrate-rich food heated at high temperatures might be responsible for one-fifth of the rate of the total cancer risk.

Keywords: heated food, acrylamide, transferrin-positive reticulocytes, micronucleus, flow cytometer, cancer risk