Effects of acrylamide on humans not entirely clear yet

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Acrylamide can form in starchy foods such as French fries, crisps, crunchy muesli or crisp bread as part of the heating process, i.e. during baking, frying or deep-frying. Studies on humans have provided limited and contradictory information of an increased risk of cancer through acrylamide. However, studies conducted with test animals have shown that if contained in feed in high doses, acrylamide increases the likelihood of gene mutations and tumours in different organs. In their draft for a scientific opinion released in July 2014, experts of the European Food Safety Authority (EFSA) concluded, on the basis of these animal experiments, that acrylamide in food may increase the risk of developing cancer in consumers of all ages. The results of this draft concur with earlier assessments by the EFSA and also agree with the opinion “Acrylamide in Food” of the Federal Institute for Risk Assessment (BfR) from 29 June 2011.

On 10 December 2014, EFSA scientists met in Brussels in order to discuss about 100 comments, made by the participants of a public consultation, on the draft for the scientific opinion. Among other things, the comments addressed the draft’s description of the possible health risks arising from acrylamide in food (e.g. carcinogenicity) and the paper’s assessment of human exposure to acrylamide in food. The feedback will be used to support the EFSA panel in the final phase of its work on the scientific opinion which is expected to be completed in the first half of 2015.

The scientific EFSA Panel on Contaminants in the Food Chain (CONTAM) is currently working on upgrading its risk assessment on acrylamide in food. The updated version will include the new scientific insights gained in the last years. The initiators of this project included the BfR and other European risk assessment authorities. In July 2014, the EFSA published its draft for a scientific opinion which was open for public comment. On 10 December 2014, the feedback collected during the online consultation was discussed on the occasion of an evaluation meeting with stakeholders. The feedback will be used to support the panel in the final phase of its work on the scientific opinion which is expected to be completed in the first half of 2015.

The draft for the scientific opinion by the EFSA released in July 2014 confirmed earlier assessments according to which acrylamide in food may increase the risk of consumers of all age groups developing cancer. As part of the so-called Maillard reaction which is also responsible for “browning” of food, acrylamide is formed every day when food is prepared at high temperatures. Important acrylamide sources are coffee, crisps, biscuits, crackers, crisp bread and toast. In proportion to their bodyweight, children are the most exposed age group.

Already in its opinion published in 2011, the BfR concluded that due to the patchy results of the studies on the potential carcinogenicity of acrylamide available at the time, a causal link between acrylamide exposure and cancer formation in humans could be neither confirmed nor ruled out. Whereas some studies demonstrated an increased risk of cancer, other did not. If associations were observed at all, they were weak.

Due to the data obtained from animal experiments, acrylamide is regarded as an undesirable substance. For industrially processed foods, acrylamide contents should therefore be further reduced. This notably applies to groups of products especially prone to high levels of acrylamide. Consumers can take steps to reduce their acrylamide intake themselves, since

acrylamide levels heavily depend on the degree of heat-induced browning of food: the darker a product, the more acrylamide it contains. Therefore, the rule of thumb is: “golden, not charred”. At temperatures below 180 degrees, the quantities of acrylamide produced are significantly lower than is the case at higher temperatures.

More Information

EFSA press release: Acrylamide in food: consultation “will help refine EFSA opinion”
http://www.efsa.europa.eu/en/press/news/141211.htm

BfR Opinion: Acrylamide in Food
http://www.bfr.bund.de/cm/349/acrylamide-in-food.pdf

Questions and Answers about Acrylamide
http://www.bfr.bund.de/en/questions_and_answers_about_acrylamide-128397.html