Bundesinstitut für Risikobewertung

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Uncoated aluminium menu trays: First research results show high release of aluminium ions

BfR Opinion No 007/2017 of 29 May 2017

The Cook & Chill method can be used in communal kitchen facilities such as child day care centres, schools, businesses, senior citizens' homes and out-of-house catering. Uncoated aluminium menu trays and dishes are often used here in which foods are delivered and served in portions.

The Federal Institute for Risk Assessment (BfR) examined in a research project whether aluminium ions from these menu trays can transfer to food. To this end, the BfR used sauerkraut juice, apple sauce (diluted) and sieved tomatoes in uncoated aluminium menu trays under the conditions of the Cook & Chill method with the process stages hot filling, quick cooling, refrigerated storage and reheating along with the subsequent keep-warm phase to analyse the transfer of aluminium ions. The test results show that when keeping food warm over longer periods, large quantities of aluminium ions are released from these menu trays and transferred to the food. Despite the limited number of samples examined, the exploratory results show that even keeping food warm for two hours in an uncoated aluminium menu tray can contribute considerably to an increase in the overall exposure of consumers to aluminium.

The European Food Safety Authority (EFSA) has derived a tolerable weekly intake (TWI) for aluminium of 1 milligram per kilogram of body weight for intake via food. According to an estimation made by EFSA in 2008, this tolerable intake quantity is probably used up by part of the population through food alone. Overall exposure to aluminium should therefore be reduced.

To limit aluminium intake from metallic food contact materials, a panel of experts from the European Council established a release limit value of 5 mg aluminium per kilogram food on the basis of what is technically feasible. Some of the aluminium transfer values from uncoated aluminium menu trays measured by the BfR exceeded this release limit value considerably. As the release behaviour of aluminium ions from the uncoated menu trays is material-specific, the results can be generalised for the product group of uncoated aluminium menu trays.

As several important pieces of information required for a comprehensive scientific risk assessment are missing, the BfR recommends that more data on the transfer of aluminium ions from uncoated aluminium menu trays to food should be collected along with data on the overall consumer exposure to aluminium. There is also a need for research into the possible health-relevant long-term effects of aluminium. In the light of the level of aluminium exposure in the general population, which is high anyway, and the fact that vulnerable consumer groups such as small children and elderly people may under certain circumstances be consuming foods prepared using the Cook & Chill method every day, efforts should be made to minimise every avoidable, additional intake by using coated aluminium trays as well as menu trays made from other materials.

More information at the BfR website on the subject of aluminium:

FAQs about aluminium in food and products intended for consumers

http://www.bfr.bund.de/en/faqs_about_aluminium_in_food_and_products_intended_for_consumers-191148.html

Aluminium-containing antiperspirants contribute to aluminium intake
BfR opinion No. 007/2014, 26 February 2014

http://www.bfr.bund.de/cm/349/aluminium-containing-antiperspirants-contribute-to-aluminium-intake.pdf

The full version of this BfR Communication is available in German on
http://www.bfr.bund.de/cm/343/unbeschichtete-aluminium-menueschalen-erste-forschungsergebnisse-zeigen-hohe-freisetzung-von-aluminiumionen.pdf

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