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Trial by fire: Extremely spicy food can be particularly harmful to children's health

For many people, spicy food is a culinary delight. But for some, it is also an invitation to test one's limits. Chilli plays a big part in this. Whether as chilli peppers, extremely hot chilli sauces, or snacks such as crisps flavoured with chilli – the hot burning taste is caused by ingredients from the capsaicinoid group. One of the best known examples is capsaicin. These alkaloids are produced by various pepper species (including the chilli) and are supposed to deter predators from eating the fruits.

However, people are often not put off by this and sometimes understand it as a challenging test of courage to eat foods with extreme spiciness. Some people even participate in spicy food contests. The "Hot Chip Challenge" recently gained media attention. After trending on social media, it became well known amongst children and adolescents. This challenge involves eating a tortilla chip made from maize that is heavily spiced with capsaicin. This is often documented in videos or photos in order to prove participation. However, consumption has already led to emergency medical interventions in some cases.

Because of the current increased public awareness of capsaicin, the Federal Institute for Risk Assessment (BfR) would like to point out serious health impairments that can occur with excessive consumption. Cases of adverse effects such as mucosal irritation, nausea, vomiting, and high blood pressure have repeatedly been reported. However, the amount of capsaicin consumed was often unknown. Children are particularly sensitive to hot chilli products. Serious poisonings in young children as a result of ingesting chilli preparations have been described in the international literature.

The BfR assumes that the spiciness traditionally tolerated by adults during a meal can be assigned to a maximum dose of 5 milligrams (mg) of capsaicin per kilogram of body weight (kg BW). This corresponds to an intake of 300 mg of capsaicin by a 60 kg adult over the course of one meal.

The BfR advises consumers to exercise caution when consuming foods heavily flavoured with capsaicin as well as large quantities of extremely hot chilli sauces and chilli extracts. For example, as part of a spicy food contest. In this case, severe health impairments are possible. These can even be life-threatening under certain circumstances. In your own household, hot chilli sauces should be kept out of reach of small children.

In the opinion of the BfR, the oral intake of chilli fruits, their preparations, and spicy to very spicy dishes (e.g. from traditional African, Arabic, South American, and Asian cuisine) within the framework of the usual international consumption is not associated with acute adverse health effects. However, because of the limited data, a reliable statement on dose-response relationships cannot be made. Intolerances in connection with the intake of chilli fruits are also known. Contact dermatitis has also been described in cases of repeated skin contact with chilli fruits (e.g. during food preparation).

Based on the data available, the BfR recommends labelling chilli and other seasoning sauces as well as products containing more than 100 mg capsaicin per kilogram of food and providing the packaging with child-resistant closures. Furthermore, the BfR recommends that the relevant food control authorities check in individual cases whether products with a capsaicin content of more than 6,000 mg/kg can be regarded as safe for consumption.

This text version is a translation of the original German text which is the only legally binding version.

Further information on the subject of food ingredients on the BfR website

BfR Opinion on capsaicin: <https://www.bfr.bund.de/cm/349/too-hot-isnt-healthy-foods-with-very-high-capsaicin-concentrations-can-damage-health.pdf>

Topic page on substance risks in food: https://www.bfr.bund.de/en/assessment_of_substance_risks_in_foods-738.html

About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institution within the portfolio of the German Federal Ministry of Food and Agriculture (BMEL). The BfR advises the Federal Government and the German federal states (“Laender”) on questions of food, chemicals, and product safety. The BfR conducts independent research on topics that are closely linked to its assessment tasks.

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