Bundesinstitut für Risikobewertung

According to the current state of scientific knowledge 5-HMF concentrations occurring in foods do not give rise to safety concerns

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When foods that contain carbohydrates or sugar are heated, the substance 5-hydroxymethylfurfural (5-HMF) is formed. The substance was initially detected in foods in the 1950s. Sometimes used as flavouring, 5-HMF is also a constituent in e.g. caramel colours and smoke flavourings. The Federal Institute for Risk Assessment (BfR) has assessed the substance's impact on human health with the following result: 5-HMF does not possess a particular toxic potential. According to the experimental studies presently available it could not be shown that 5-HMF has any relevance for human health with regard to possible carcinogenic and genotoxic effects.

BfR has assessed consumer intake of 5-HMF by way of various food groups. Although some foods could not be included in the exposure assessment as analytical data of the substance in these foods is either unavailable or insufficient. However, this exposure assessment can be considered in general as representative. It shows that the margin of safety to the maximum dose of 5-HMF derived in some animal studies as not leading to any adverse effects is generally large enough (greater than 100) implying that any health risks for humans cannot be assumed. An exception may be the consumption of prune juice, which contains considerably higher amounts of 5-HMF. But so far distinct health risks have not been identified in this case either.

One source of 5-HMF which remains to be investigated are foods that contain caramel colours as additives. BfR considers additional extensive studies for the determination of 5-HMF concentrations in other foods to be of low priority. Rather, it appears more important that further toxicological tests are carried out in order to clarify whether 5-HMF or its metabolites could contribute to the development of cancer – especially intestinal cancer – as this was originally interpreted based on earlier studies.

The full version of this BfR Opinion is available in German on
http://www.bfr.bund.de/cm/343/5_hmf_gehalte_in_lebensmitteln_sind_nach_derzeitigem_wissenschaftlichen_kenntnisstand_gesundheitlich_unproblematisch.pdf