

Potential ways of Reduction of 3-MCPD Esters in Vegetable Oils/Data on Mitigation

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After the finding of 3-MCPD esters in fats, oils and oil containing foods by the working group of J. Velisek and the publication of appropriate results in November 2007 by the Chemisches und Veterinäruntersuchungsamt (CVUA) Stuttgart, the Federal Institute for Risk Assessment, Germany stated that “there is a need for immediate examination of the causes and a search for alternative techniques for the manufacture of refined fats with a view to reducing the levels of 3-MCPD esters...”.

Since the possibilities of consumers to avoid 3-MCPD esters in nutrition are limited the industry is in duty to develop strategies for minimizing the compounds in fats and oils. From a technological point of view three different ways are conceivable which alone or in combination can be successful: (1) reduction of the precursors in the raw material, (2) optimization of the refining process with regard to the formation of 3-MCPD esters without deterioration of the quality of the products, (3) removal of 3-MCPD esters from the product after processing. The main problem is the dilemma between the need for reducing the content of 3-MCPD esters in fats and oils and the legitimate consumer expectation regarding food quality. So the aim of all efforts has to be the reduction of the content of 3-MCPD esters with simultaneous maintenance of the product quality.

The presentation discusses the different possibilities which are conceivable to reduce the contents of 3-MCPD-esters in fats and oils and presents results from experiments showing the effect of the different possibilities on the content of 3-MCPD-FE.

With palm oil as basis the influence and the potential of the different steps of the refining process for the formation of 3-MCPD-esters are shown. Deodorisation is the most important step for the formation of 3-MPCD-esters, but also the other steps change the amount of precursors resulting in a certain contribution to the formation of 3-MCPD-esters without forming it itself during the refining step.