

## No Formation of MCPD-esters and Glycidyl-ester during the baking process of Fine bakery wares

MCPD-esters and Glycidyl-esters are formed at the refining step of vegetable oils with resulting levels depending on levels of naturally occurring precursors in these oils and the processing conditions applied during the refining step.

Refined vegetable oils are used as ingredients in biscuits and waffles recipes. In order to understand the potential formation of MCPD-esters and Glycidyl-esters during the baking process of biscuits and waffles, a detailed study has been conducted under the lead of the German Confectionary Association BDSI in collaboration with the LCI, the Food Chemistry Institute of the BDSI. This study on basis of more than 50 trials has shown that -within the full range of typical baking conditions -, there is no formation of MCPD-esters and Glycidyl-esters during the baking process. Accordingly, levels of MCPD-esters and Glycidyl-esters in finished products correspond to the level of these esters in the oil ingredient and the content of the oil in the recipe (see also fig. 1).

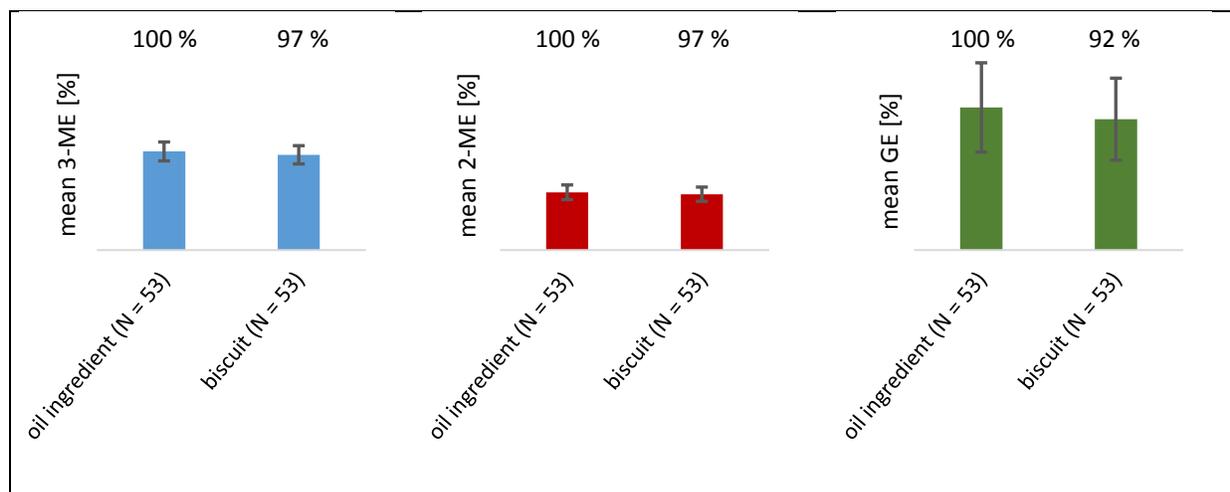


Fig. 1: relation of 3-ME-, 2-ME- and GE-content in oil ingredient and corresponding biscuit in %.

The BLL/FoodDrinkEurope 2016 'Toolbox for the Mitigation of 3-MCPD Esters (MCPDE) and Glycidyl Esters (GE) in Food' covers this already in its chapter 3 on 'Industrial Use/ Processing':

*"During the processing of food of plant origin, new formation of 3-MCPDE and GE has not been found so far. This has been confirmed by studies carried out at the Food Chemistry Institute (LCI) in Cologne, Germany, which show that no esters are newly formed during the production process (deep-frying) of*



*potato crisps [45]. The same applies for the baking process of e.g. cakes and cookies where also no new formation of esters was observed.”*

Baking under the full range of typical processing/baking conditions does not lead to an increase of the level of MCPD-esters and Glycidyl-esters in the finished product and therefore no mitigation measures are available to influence the level of esters at the baking process. Accordingly, as the resulting levels of the esters in the finished product are only depending to the levels in the vegetable oils which are added as ingredients to the recipe, there is no benefit from our perspective in establishing risk management measures for finished products. Therefore, risk management measures for vegetable oils should lead to levels of the esters in these oils to ensure safe vegetable oils, which then can be used as safe ingredients to produce safe finished products.

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*signed Prof. Dr. Reinhard Matissek and Food Chemist Anna Dingel*