

Optimized fatty acid profiles of bakery goods via non-triglyceride-based structuring of rapeseed oil

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Solid fats are very important for the production of bakery goods, because the fat is responsible for the plasticity and malleability of the dough as well as for the rheology, texture, shelf life and taste of the final product. Usually, solid fats like palm oil, coconut oil or hydrogenated vegetable oils are used for the preparation of bakery products. These fats have in common that they are rich in saturated fatty acids and, especially in case of hydrogenated vegetable oils, contain *trans*-fatty acids, which cause cardiovascular diseases. Moreover, the application of palm oil is strongly criticized, since the increasing demand for palm oil leads to the deforestation with harmful consequences for the nature.

Therefore, the presented project aims at the optimization of fatty acid profiles in bakery goods via replacing conventional solid fats by non-triglyceride-based structured vegetable oils, so called oleogels. For the preparation of oleogels rapeseed oil, which displays an ideal fatty acid composition with a low amount of saturated fatty acids and a high amount of unsaturated fatty acids, was used as continuous phase. As building blocks 10 % sunflower wax or a mixture of 5 % ethyl cellulose and 5 % monoglycerides was used, which resulted in oleogels that were comparable to margarine regarding their firmness and oil binding capacity. Small-scale baking trials confirmed that both oleogels were suitable for the preparation of cookies, since no significant difference regarding processability, texture, taste and mouth feeling compared to conventional solid fats was observed. Moreover, the consumer acceptance of oleogel based bakery products was analyzed via the evaluation of the net promoter score, which indicates the probability that the consumer will recommend the product. Cookies and muffins based on oleogels with ethyl cellulose and monoglycerides were comparable or even better accepted by the consumer than conventional solid fats, whereas the structure and elasticity of products with sunflower wax oleogels was too tight and hard.

To summarize, the results underline that oleogels based on ethyl cellulose, monoglycerides and rapeseed oil are well accepted by the consumer, so that the application of oleogels in bakery products has great potential to become marketable.