

Rapeseed oil based oleogels as promising alternative to conventional deep-frying media

Madline Schubert¹, Sharline Nikolay², Nelli Erlenbusch¹, Bertrand Matthäus¹

¹ Max Rubner-Institut, Federal Research Institute of Nutrition and Food, Department of Safety and Quality of Cereals, Schützenberg 12, 32756 Detmold, Germany

² OWL University of Applied Sciences and Arts, Department of Life Science Technologies, Campusallee 12, 32657 Lemgo, Germany

During deep-frying the frying medium is incorporated by the product being fried and becomes a component of the food. Hence, the texture and rheology of the frying medium have a significant impact on the surface of the food, so that often fats and oils with very special physical, chemical and rheological properties are needed. In order to keep the surface of fried food less fatty and to prevent oil leakage during storage, usually, palm oil or hardened vegetable oils are used as frying media, since these fats quickly recrystallize and convert into a solid phase after the frying process. However, conventional solid fats consist of a high amount of nutritionally unfavourable saturated fatty acids and especially palm oil is strongly criticized because of environmental aspects.

Therefore, oleogels based on rapeseed oil and a structurant like sunflower wax (SFW) or monoglycerides (MG) could be a proper alternative. As an example, French fries were produced using oleogels with 5 % SFW or 5 % MG as frying medium and the fries were analyzed regarding their texture, colour, total fat content, fatty acid profile, polar compounds, polymerized triglycerides and sensory properties.

In comparison to the conventional product, French fries deep-fried in oleogels displayed optimized organoleptic properties, since the surface of the fries was less fatty and almost no oil leakage was observed. Moreover, the application of oleogels as frying medium resulted in a reduction of saturated fatty acids, which underlines, that structured rapeseed oil represents a promising new alternative for deep-frying.