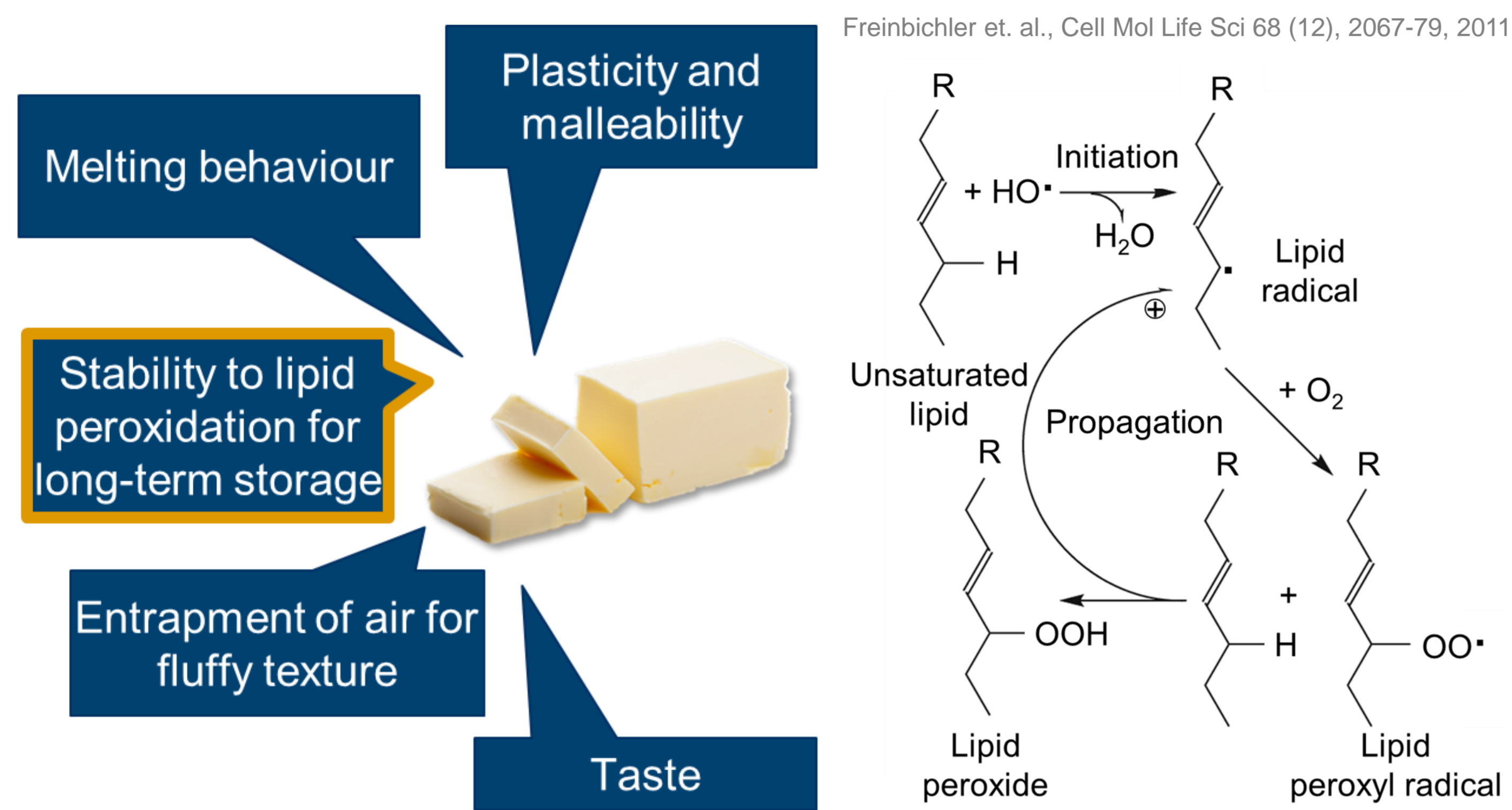


Stabilization of rapeseed oil based oleogels for their application in bakery goods

Madline Schubert, Nelli Erlenbusch, Bertrand Matthäus

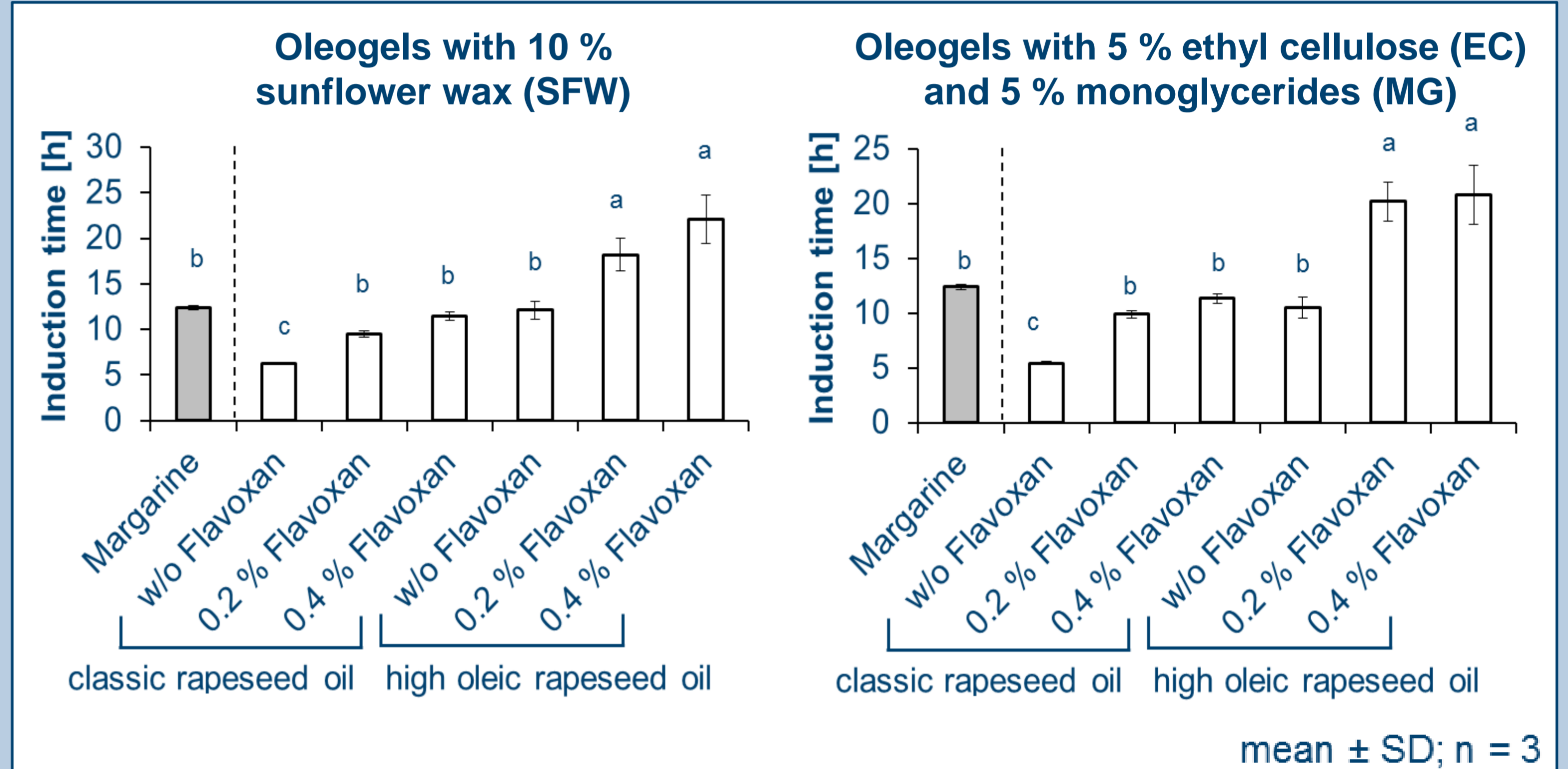
Max Rubner-Institut, Federal Research Institute of Nutrition and Food, Department of Safety and Quality of Cereals, Schützenberg 12, 32756 Detmold, Germany

Role of fat for the production of bakery goods



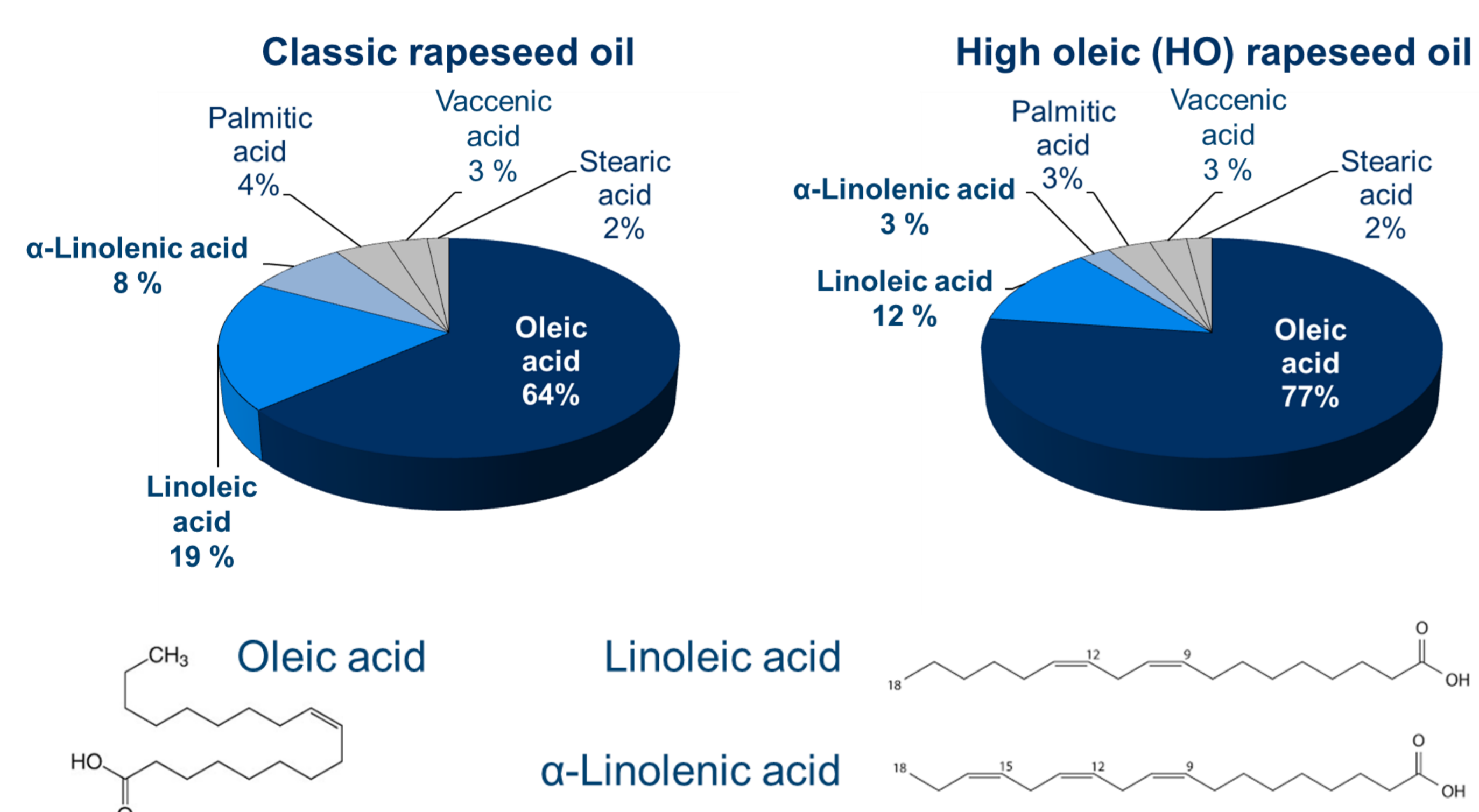
The shelf-life of bakery goods significantly depends on the choice of the applied fat, since a high amount of saturated fatty acids prevents premature lipid peroxidation. If rapeseed oil based oleogels are used, a stabilization of the oil is recommended.

Stabilization of oleogels via Flavoxan and HO oil



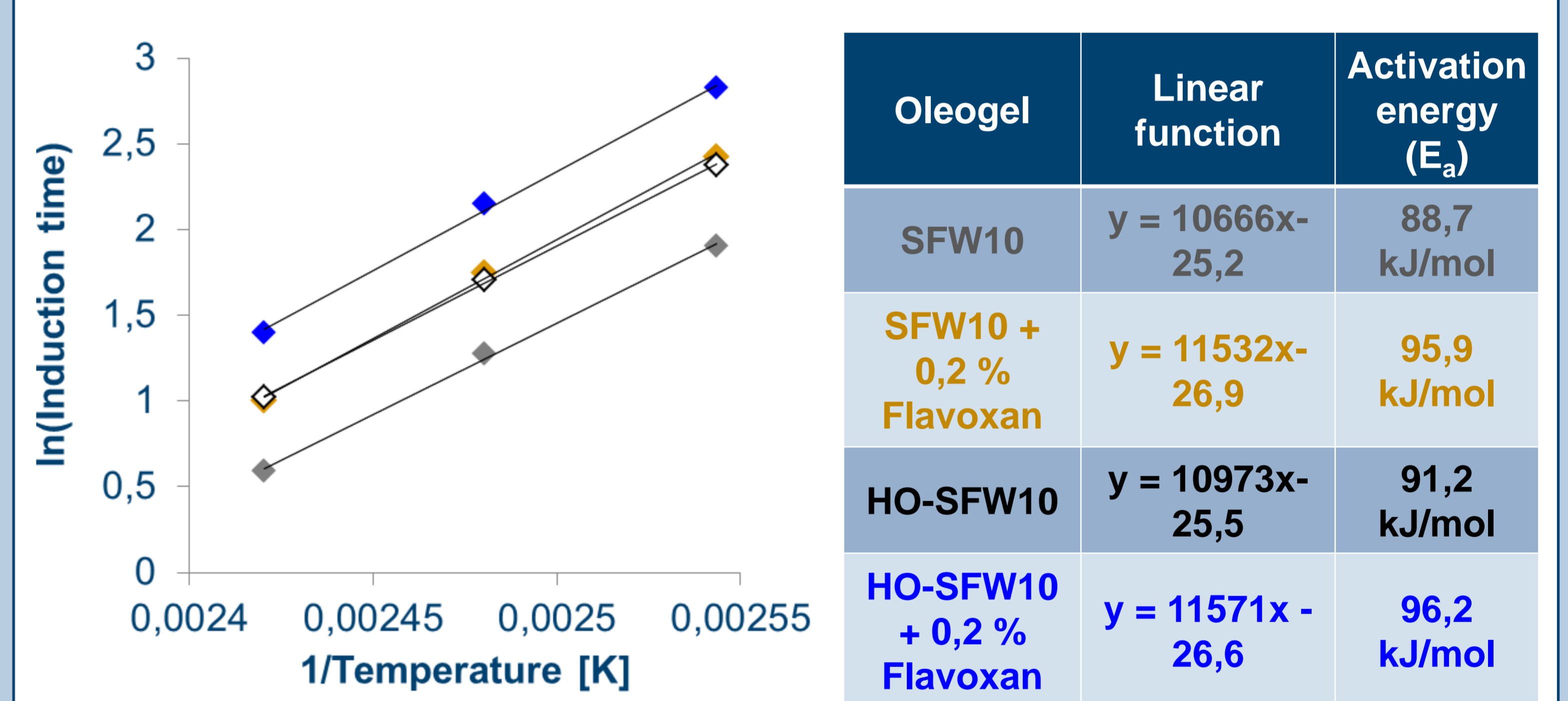
The influence of HO rapeseed oil and different concentrations of Flavoxan on the oxidative stability of oleogels was tested in a Rancimat at 120 °C. HO rapeseed oil and Flavoxan double the induction time, so that the shelf-life of oleogels is comparable to margarine.

Fatty acid composition of rapeseed oils



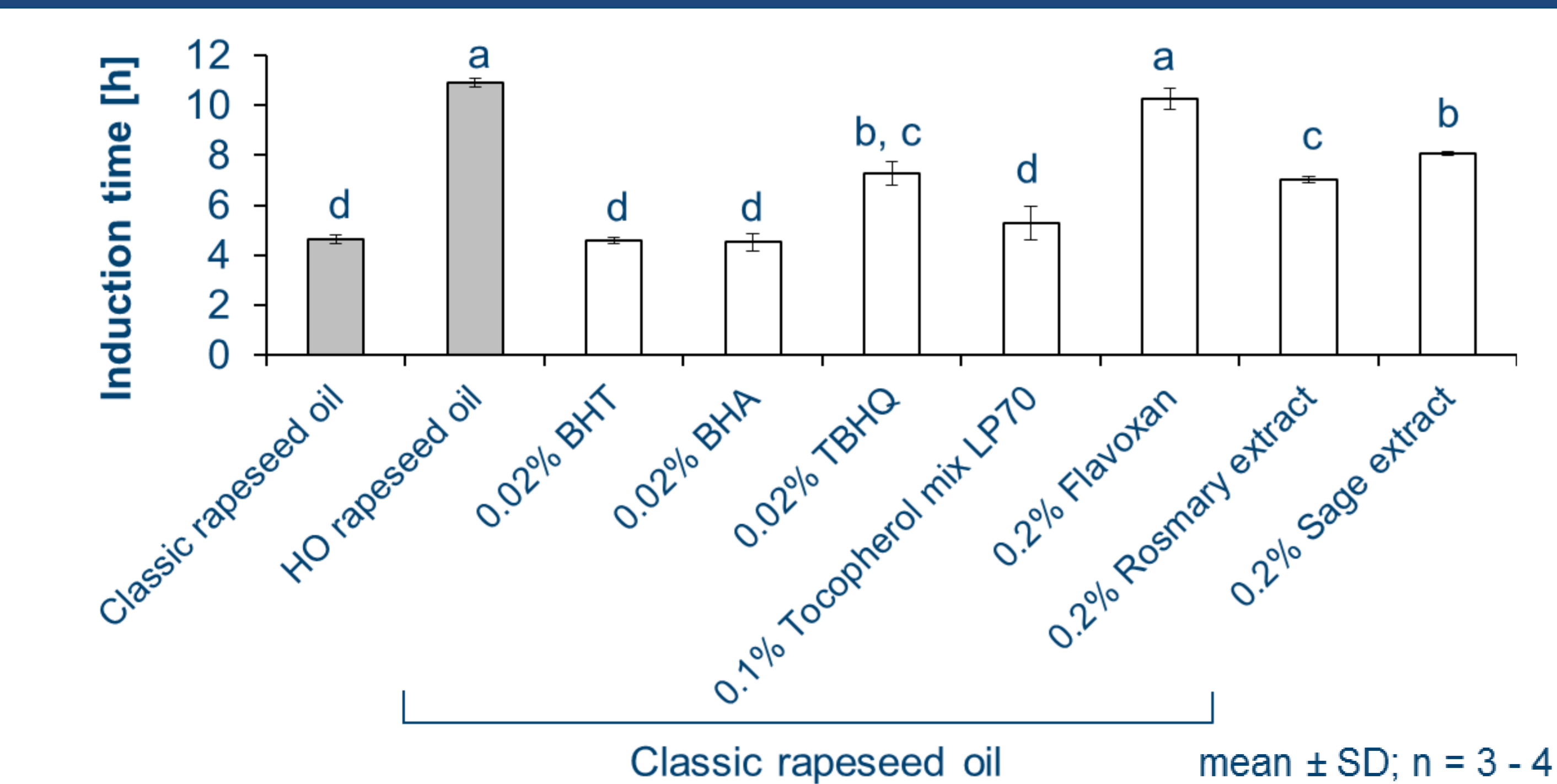
For the generation of oleogels, which are less prone to oxidation, high oleic rapeseed oil can be used as continuous phase. The reduction of unsaturated fatty acids and the higher amount of oleic acid results in a higher oxidative stability of the oil.

Activation energy of different SFW 10 oleogels



The activation energy of different SFW10 oleogels with and without HO rapeseed oil and 0,2 % Flavoxan was evaluated using the Rancimat method. Oleogels based on the combination of HO oil and 0,2 % Flavoxan displayed the highest activation energy, indicating an optimized and prolonged shelf-life of oleogels and resulting bakery products.

Stabilization of rapeseed oil via antioxidants



The influence of several synthetic and natural antioxidants on the oxidative stability of rapeseed oil was tested in a Rancimat at 120 °C. The application of the natural antioxidant Flavoxan resulted in a doubled induction time, which was comparable to HO oil (BHT: butylated hydroxytoluene; BHA: butylated hydroxyanisole; TBHQ: *tert*-butylhydroquinone; Flavoxan: mixture of rosemary extract, tocopherols and lecithine).

Summary

The application of rapeseed oil as continuous phase for oleogel preparation is recommended due to the favourable fatty acid composition of the oil. However, the oxidative stability of rapeseed oil is much lower compared to conventional solid fats. To stabilize rapeseed oil based oleogels, the natural antioxidant Flavoxan or a high oleic rapeseed oil can be used, which doubles the induction time of oleogels, so that the shelf-life of oleogels and resulting bakery products is comparable to margarine and other conventional solid fats.

Funding

