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Effect of different somatic cell levels on rheological properties of probiotic set yoghurt

Anita Bavarian
Islamic Azad University Shahreza Branch, Iran

In the present work, oscillatory rheological tests were carried out to investigate the effect of milk SCC on the viscoelastic properties of probiotic set yoghurt. The starter culture used to produce probiotic yoghurt was ABY1. Results of strain sweep test showed that by increasing SC levels in samples, structural strength, yield stress and flow point were decreased. Duration of storage time increased storage modulus but had no significant effect on damping factor. Frequency sweep test results revealed decreasing complex modulus and viscosity with the increasing SC levels. These 2 parameters had not changed during storage time ($p \geq 0.05$). Power law model was fitted on experimental data. The consistency index of yoghurt samples decreased about 2 times ($p < 0.05$) by increasing SC levels, however flow behaviour index increased. Increasing flow behaviour index of yoghurt with high SC level showed a weaker gel structure. Storage time had a significant effect on consistency index between first and day 7, while no significant differences on flow behaviour index observed during 21 days of storage. Therefore, increasing SC levels had a more pronounced effect on the parameters of viscoelastic and flow behaviour than duration of the storage of the probiotic yoghurts. Based on these results and adverse effect of increasing SC levels on milk proteins particularly caseins as well as lactose and minerals, raw milk used to produce probiotic yoghurt should not contain more than 200,000 somatic cells.

anita.bavarian@gmail.com

Combined proton and deuterium NMR - A simple, smart and versatile technique for authentication of fats and oils

Armin Hermann
Institut für Lebensmittelchemie und Arzneimittelprüfung, Germany

Stable isotope analysis is a well-known tool for testing food authenticity. Generally, its application demands for complex instrumentation (NMR and IRMS) and laborious sample preparation. In contrast to established procedures (e.g. SNIF-NMR), a high degree of simplification is achieved by a smart combination of proton and deuterium NMR spectra. For testing the authenticity of vinegars, this strategy has already been applied successfully. However, this technique has not been applied for testing the authenticity of fats or oils, although the measurement for these commodities is further simplified as there is almost no sample preparation. For lipids, the technique allows to obtain the average deuterium concentration of up to 8 different molecular moieties simultaneously. In a preliminary study, the deuterium ratio of 53 samples of fats and oils from different biological origins {plants (27), land animals (20) and sea animals (6)} were analyzed and evaluated. Data analysis of the deuterium isotope ratios revealed a clear differentiation for fats originating from plants or animals respectively. The moiety with the highest discriminating power is the α-(CH_2)-group (i.e. the methylene group directly attached to the carboxyl group of the fatty acid). An example for application is testing edible fats (e.g. margarine) on their precursors. The results of this study may also be of interest for mechanistically studies in biochemistry. Furthermore, the technique is of general use, as it can be applied to virtual all compounds.

armin.hermann@yahoo.co.uk