

Effect of Oil Source on Oleogel Structure

Giorgio Mirolo, Sonia Calligaris, Monica Anese Dipartimento di Scienze degli Alimenti,
Università di Udine, via Sondrio 2a, 33100 Udine, Italy

Oleogels, that are oils structured through the addition of molecules forming self-assembly supramolecular networks, have been proposed as a promising strategy for the production of foods with added health value. A wide number of different structuring agents (i.e. oleogelators) have been identified. Among these, saturated monoglycerides and mixtures of fitosterols and -orizanol are considered to be those with the highest potential for a wide range of applications. The knowledge of the factors affecting the structural properties of oleogels with different chemical composition is essential for their exploitation at industrial level. The aim of the present research was to investigate the capability of different oleogelators to structure lipids from different sources and study the structural characteristics of the resulting oleogels. To this purpose, oleogels were prepared by mixing 5% (w/w) of structuring agents (saturated monoglycerides or mixtures of β sitosterol/-orizanol) in sunflower oil, extra virgin olive oil and triolein. The structural characteristics of the oleogels obtained were evaluated by measuring their thermal, rheological and mechanical behavior at 20 °C. Results obtained in this study highlighted that the self-assembly properties of the structuring molecules were affected by the physical properties of the lipid source. In particular, lipids characterized by high viscosity values translated in oleogels with low firmness. This behavior is probably associated to the formation of a less structured network due to an increase in the difficulty of oleogelator molecules to pack together.