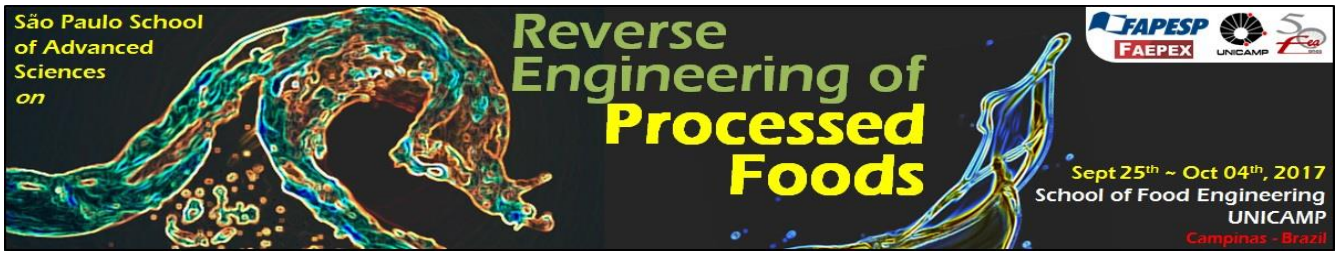

CHARACTERIZATION OF EDIBLE BEESWAX-BASED OLEOGELS AIMING AT FOOD INCORPORATION

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Uprising concern and consciousness of consumers, regarding saturated fat consumption, and the consequent demand for healthier food products are well visible in today's society. Such continuous challenges question the food industry to quickly present solutions. Replace saturated fats in the food processing chain can be accomplished with the incorporation of edible oil-based gels or oleogels, which try to reproduce common fat structural and sensorial characteristics. Oil gelation effectiveness is managed by the gelators' crystallization behaviour, where beeswax rises as a good candidate. Beeswax ability to structure oil when used in low concentrations, makes them a good solution to produce oleogels to be applied as fat replacers. On this work is reported the impact of carbon oil chain (medium chain triglycerides - MCT and long chain triglycerides - LCT) on beeswax-based oleogels morphology, viscoelastic properties and crystallization. Viscoelastic behaviour (*G'*, *G''*), directly related to gel structural network, was changed with increasing beeswax concentrations and with the oil type. Also changes in the typical lamellar crystal conformations were detected by small angle X-ray scattering (SAXS). Moreover, the influence of a bioactive (β-carotene) in beeswax oleogels matrix was evaluated and results showed that the bioactive presence in gel structure, induced strength in the overall viscoelastic response, and an enhanced oil binding capacity of oleogels. Structural modification was proven by SAXS and X-ray diffraction. Results showed a diverse arrangement of the internal lamelar conformation and also relevant information about crystal polymorphism type. Regarding the oxidative response during storage, the results were similar between oleogels with and without the bioactive. Oleogels with liquid like behavior (i.e. 2 % w/w of beeswax) showed values 10-15 % lower than those obtained for oleogels with solid like behavior. The tailoring possibilities of beeswax oleogels and interesting morphological characteristics makes them suitable to act as fat replacers, food texturizers and carriers of bioactive compounds in foods.

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