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Oleogel containing Beeswax and Monoglycerides as a Potential Substitute for Confectionery Palm Fats

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There is a lot of criticism of palm oil for its sustainability, environmental and health impacts. For this reason, many companies are trying to replace palm oil in their products with other alternatives, such as vegetable oils. The substitution of solid vegetable fats used in confectionery products cannot be solved by oils alone, and therefore alternatives are needed that provide the solid palm oil fractions. Oleogels can provide a kind of solution for this replacement. Oleogelation is a process in which liquid oil with a gelator takes on a such semi-solid structure like the easily spreadable fats and this three-dimensional network structure encloses the liquid oil (Toro-Vazquez et al., 2007; Davidovich-Pinhas, 2018). Among a lot of gelators waxes and monoglycerides are promising, if the goal is to replace a harder fat for the confectionery industry (Doan et al., 2016; Fayaz et al., 2017a; Patel & Dewettinck, 2016). In our work the rheological, textural and thermal properties of oleogels containing high oleic sunflower oil, beeswax and monoglycerides were determined. In the samples we examined, the gelator concentrations were: 20% beeswax, 15% beeswax and 5% monoglyceride, 10% beeswax and 10% monoglyceride, 5% beeswax and 15% monoglyceride, and 20% monoglyceride. Based on our results, the oleogel containing 15% beeswax and 5% monoglyceride seems an eutectic crystal of beeswaxes and monoglyceride. It has relative high hardness, high storage modulus and high viscosity therefore it can replace the Chocofill filling fat, which contains mainly palm fat, used in large quantities in sweets. In our subsequent work, we also measured oleogels with total concentrations of 5, 7 and 9% with monoglycerides only and beeswax only, as well as mixtures of these. The results are similar to those for oleogels with a total concentration of 20%.

Biography

Szabolcs Homolya continues his PhD studies at the Hungarian University of Agriculture and Life Sciences. His research is focused on the confectionery and fat industry, in particular on palm fat replacement. With a degree in food engineering, he is employed at Szerencsi Bonbon Kft., where he works as a confectionery product development engineer. He wants to perform palm fat replacement with oleogels and he is working on this topic together with the university and his workplace, so that his scientific research is constantly tested in practice. He is also involved in other innovative research projects at the university, actively supporting the work of students. He has participated in several national and international conferences and has published a first-authored article on his research topic

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