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Streszczenie w języku angielskim pracy doktorskiej:

Abstract

The main purpose of the research carried out as part of this study was to compare two methods of microcoagulation to obtain a product that imitates solid fat.

The denaturation of whey proteins induced by heating is one of the main problems limiting their use in food products. As a way of modifying and thus improving the functionality of whey protein, it was proposed to use and compare two methods of whey protein microparticulation, the first involving high-pressure shear and the second one by which microparticles were produced by shear mixing in a scraper exchanger. Whey proteins were produced in industrial conditions at the Mazovian Dairy Cooperative Ostrowia, in accordance with the applicable factory instructions.

The preparation of the product imitating solid fat was preceded by rheometric tests, which allowed to track changes in the structure of the base material for the production of homogenised microparticles. Based on these results, it was found that it was not possible to carry out the "cold" gelation process using the concentrate, only in some cases it was possible to rebuild the previously destroyed structure of the gel network at lower pH conditions.

The method of obtaining microparticulates by means of homogenization proved to be more efficient in terms of obtaining the number of particles of the desired size 1- 10 μm , used as substitutes for fat globules. It was therefore considered that among them were particles that produce the trait described as "smooth, creamy, full".

The results of sensory analysis confirmed the receipt of microparticles accepted by potential consumers. A better obtained product turned out to be a sample obtained by homogenization. Homogenized microparticulates turned out to be not only better in terms of full-fat characteristics, but were also chosen as the least sandy. The microparticulates obtained using the heat exchanger were characterized by too much sandy feeling.

Analysis of the texture of microparticles from both methods confirmed that better features were obtained in the sensory evaluation for the homogenization method.