

The Use of Thermal and Chromatographic Methods in the Assessment of Fat Isolated from Micellar Casein

Agnieszka Górska *, Diana Mańko-Jurkowska and Patryk Strzyżewski

Department of Chemistry, Institute of Food Sciences, Warsaw University of Life Sciences; di-
ana_manko_jurkowska@sggw.edu.pl (D.M.-J.); s197283@sggw.edu.pl (P.S.)

* Correspondence: agnieszka_gorska@sggw.edu.pl

Abstract: The aim of the study was to analyze the fat extracted from natural and flavored casein. Casein is the main protein in milk. It is made of structures called micelles. Pure casein is obtained through technological processes and contains a small amount of fat that has not been characterized yet. Fat extraction was performed by the Folch method. The extracted fat was examined by gas chromatography and differential scanning calorimetry. The fatty acid profile of the separated fats was determined using gas chromatography. 20 fatty acids were found and their content was compared with the literature data of milk fat. The analysis showed that the tested fat was dominated by saturated fatty acids, of which palmitic acid had the highest content - 31.93%. The obtained results for all three tested caseins were comparable to each other, no significant differences were noticed when comparing them to milk fat. The melting profiles of fat were analyzed by DSC technique and it was found that an endothermic transition had occurred. Differences in the number of endothermic peaks were noticed comparing the tested fat to milk fat. The fat from the casein contained two endothermic peaks for the medium-melting and high-melting fractions, while there was also an endothermic peak in the milk fat for the low-melting fraction.

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