

DETERMINATION OF MILK FAT ADULTERATION IN SOUR CREAM WITH VEGETABLE OILS BY GC-FID METHOD

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Abstract

Food adulteration appears in all areas of the food industry, most often to reduce production costs and to earn extra money. In the dairy industry, the adulteration of milk fat with vegetable oils is an act of intentionally reducing their qualities. Milk fat in milk and dairy products can be partially or completely substituted with vegetable oils. The most often adulterants of vegetable oils are palm oil and coconut oil. The aim of this study is determination of vegetable oils in sour cream by GC-FID method.

A total of fifty-five samples from the local market were analyzed in this study. Thirty-six samples were sour cream and nineteen samples were sour cream with peppers. Sample preparation was according to modified AOAC Official Method 996.06, 2005. The determination of fatty acids was carried out on a gas chromatograph with flame ionization detector (GC-FID). Butter milk fat, palm oil and coconut oil were used as reference standards. GC-FID analysis of fatty acids composition of sour cream in combination with multivariate statistical data processing, which included reference standards of fatty acids composition of milk fat, palm oil and coconut oil, were used for determination of vegetable fat.

The vegetable fats were detected in four samples (7.27%). In two samples were detected palm oil, in one sample was detected coconut oil, while in one sample was detected palm and coconut oil. Also, from the all positive samples of vegetable oils, in three samples the milk fat was partially substituted, while in one sample the milk fat was completely substituted.

This study provides a basic data for milk fat adulteration in sour cream with vegetable oils. The frequent monitoring of milk and dairy products, for the detection of vegetable fats, can prevent adulteration and protect the consumers from fraud.

Key words: *Sour cream, Adulteration, GC-FID, Fatty acid.*