

## IMPACT OF VEGETABLE OILS ON THE FATTY ACID COMPOSITION OF A MILK-CONTAINING CURD PRODUCT

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### Abstract

For the development of enriching compositions based on vegetable oils, which will expand the range of dairy products with a balanced fatty acid composition, mathematical calculations have been proposed. A study of the fatty acid composition aimed at developing a blend based on natural vegetable oils, followed by partial replacement of milk fat in the technology of milk-containing products was conducted.

Sour milk curd with a mass fraction of fat of 5%, obtained with separation method was used as a sample. To optimize the fatty acid composition of the blend, mathematical calculations were performed using the target matrix. The calculation was based on the fatty acid composition of milk fat. The application of the mathematical method allows to quickly and with a sufficient level of accuracy adjusting the composition of the blend for variable values of the content of individual fatty acids in milk fat. The study of the fatty acid composition of the product of milk-containing curd with 50% replacement of milk fat for a blend of natural vegetable oils was conducted using gas-liquid chromatography.

Selection of vegetable oils for blending - corn, rapeseed and walnut oils was conducted taking into account the possibility of balancing the fatty acid composition of the milk-containing curd product and their compatibility with each other according to organoleptic evaluation. Organoleptic evaluation of fermented milk pastes was performed by the State Standards of Ukraine ISO 6564:2005. The percentage of replacement of milk fat for a blend of vegetable oils is substantiated by that the group of dairy products include products whose degree of replacement of components does not exceed 50%. Quantitative fatty acid content was determined by the peak area on the chromatogram compared to the peak area of fatty acids with a known concentration. The fatty acids at the peaks of the chromatogram are indicated by the number of carbon atoms in it, followed by a colon indicating the number of double bonds in the molecule. As a control, sour milk curd with a mass fraction of fat 5% was used, which corresponds to the test sample.

The analysis of chromatograms allowed making a conclusion about reduction in comparison with the control sample, almost twice, quantity of saturated fatty acids of a product of milk-containing curd - 30% with the percentage of monounsaturated fatty acids increasing slightly by 4.44%. The total amount of polyunsaturated fatty acids increased by 23.6%, an increase in the amount of  $\omega$  - 6 by 2.2%.

It was determined that the proposed 50% replacement of the mass fraction of milk fat of milk-containing curd product allows to sufficiently increase the content of monounsaturated and polyunsaturated fatty acids, as well as bring the fatty acid composition of milk-containing product to the theoretical "ideal fat" recommended by nutritionists.

**Key words:** Blend, Oil, Chromatography, Milk-containing product.