

Revealing the falsification of semi-finished beef products with mechanically deboned minced chicken using the example of dumplings

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Abstract

Human nutrition is an important factor affecting human health. Counterfeiting is one of the most pressing problems in the market, which worries manufacturers, sellers and consumers. There are a variety of product counterfeiting: substitution of expensive food products for cheaper ones, manufacturing of products with low nutritional value, deterioration of the recipe and plagiarism of the brand. It is also necessary to observe the correct labeling of the product, as this enables the consumer to meet his requirements when choosing a product. This article presents the results of our own research revealing the falsification of semi-finished beef products with mechanically deboned minced chicken using the example of dumplings. In the analysis, four fatty acids were selected for the presence or absence of chicken fat in ground beef. The determination of fatty acids was carried out by gas chromatography. Gas chromatographic analysis is considered to be effective for identifying food products due to its high degree of sensitivity, speed and simplicity.

Sample preparation stages included the use of sodium methoxide in methanol with a molar concentration of 2 mol/dm³. Gas chromatographic analysis was carried out on a flame ionization detector with a quartz capillary column. For simplicity, reduction of sample preparation time and better results, the samples were filtered under vacuum at atmospheric pressure, which significantly accelerated the filtration process. The analysis of the test sample was carried out in an automatic mode according to the specified program of the chromatograph.

Myristic, palmitoleic, margaric, stearic, linoleic, and arachidic acids were chosen as “labels” of fatty acids. It has been shown that even an insignificant addition of one type of impurity of another to meat leads to a change in the fatty acid composition of the product.

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