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Methods for detecting falsification of meat semi-finished products

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Abstract

Currently, the main part of the food in human diet is represented by animal proteins, the role of which is very significant. Meat, meat-containing products and semi-prepared products are a source of easily digestible protein and most essential amino acids and an important element in maintaining the optimal functioning of the human body. In human diet, they are replenished by livestock products, which have a wide variety, leads to the consideration of the consumer properties of the finished product. One of the main indicators of product quality for consumers is the organoleptic and recipe indicators of the finished product. Often, the declared content of the product differs from its actual content. The relentless demand for meat products, as well as the growth of competition, make it necessary to constantly its quality control. An important problem in the food market is the identification of falsification of meat-containing products and semi-prepared products associated with the replacement one type of meat and fat with other types.

The article considers the main analytical methods for identifying the replace part of beef meat and fat with other, cheaper meat components, primarily pork and chicken. This article shows the use of gas chromatography (GC) and polymerase chain reaction (PCR) to detect meat products counterfeits. The fatty acid content of meat-containing products was determined by GC with a flame ionization detector (PID). Sample preparation based on the production of fatty acid methyl esters (FAME) from triglycerides by transesterification with a methanol solution of sodium methylate is preceded the GC analysis stage. Real-time PCR diagnostics were performed using commercial PCR kits. The PCR analysis consisted of the sample preparation nucleic acids extraction the amplification of DNA. The considered and tested methods of GC and PCR analysis showed optimal and reliable results.

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