

## THE APPLICATION OF DIFFERENT METHODS FOR THE DETERMINATION OF FAT CONTENT IN SELECTED ANIMAL – ORIGIN PRODUCTS

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Abstract

**Abstract:** The aim of the study was to assess the fat content in selected animal-origin products (ie. black pudding, luncheon, wiener, bacon) as well as certified reference material (MUVA RM700 Boiled Sausage) using two analytical methods. One of them was the fat extraction using a Soxhlet technique, and the other one – the extraction using carbon dioxide in supercritical state. Methods based on Soxhlet extraction have been and are at present used as reference. This conventional method is cheap and accurate, and this is why it has been the most used extraction technique worldwide for a number of decades. On the other hand some modern methods of fat determination are needed. Supercritical Fluid Extraction is quick, safe, and it eliminates any hazardous chemicals or solvents used in traditional extraction methods. For this purpose we used TFE 2000 fat analyzer (LECO Corporation). For the methods used the following validation parameters were determined: accuracy, precision, intermediate precision, correctness. The fat content in black pudding and luncheon meat ranged from  $11.5 \pm 4.5$  g/100g (TFE) to  $12.1 \pm 0.0$  g/100g (Soxhlet) and from  $13.2 \pm 0.5$  g/100g (Soxhlet) to  $13.8 \pm 0.7$  g/100g (TFE), respectively. For wiener samples we received values between  $15.7 \pm 0.4$  g/100g (TFE) to  $17.8 \pm 0.1$  g/100g (Soxhlet). The fat content in bacon samples ranged from  $48.2 \pm 2.5$  g/100g (TFE) to  $48.7 \pm 0.7$  g/100g (Soxhlet). The results received remain consistent with the values given in the Polish “Food Composition Tables”. The application of the methods described above for the determination of fat content in animal – derived products is dependent ie.: on the purpose of analysis, the amount of fat in food product sample and the time for receiving the results.

## Primena različitih metoda za određivanje sadržaja masti u odabranim proizvodima životinjskog porekla

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### Rezime

Cilj ovog istraživanja je bio da se oceni sadržaj masti u odabranim proizvodima životinjskog porekla (npr. crni puding, meso, viršla, slanina) kao i sertifikovani referentni materijal (MUVA RM700 Boiled Sausage) korišćenjem dve analitičke metode. Jedna je ekstrakcija masti korišćenjem metode po Soxhlet-u, a druga – ekstrakcija korišćenjem ugljendioksida u superkritičnom stanju.

Metode koje se zasnivaju na ekstrakciji po Soxhlet-u se još uvek koriste kao referentne metode. Ova konvencionalna metoda je jeftina i tačna, i zbog toga predstavlja tehniku ekstrakcije koja se najviše koristi u svetu. S druge strane, neke moderne metode za određivanje sadržaja masti su neophodne. Superkritična tečna ekstrakcija predstavlja brzu, bezbednu metodu koja eliminiše sve opasne hemikalije ili rastvarače koji se koriste u tradicionalnim metodama ekstrakcije. U ovu svrhu koristili smo TFE 2000 analizator masti (LECO Corporation). Za metode korišćene, određivani su sledeći parametri validacije: tačnost, preciznost, srednja preciznost, ispravnost.

Sadržaj masti u crnom pudingu i mesu bio je od  $11,5 \pm 4,5$  g/100g (TFE) do  $12,1 \pm 0,0$  g/100g (Soxhlet) i od  $13,2 \pm 0,5$  g/100g (Soxhlet) do  $13,8 \pm 0,7$  g/100g (TFE), respektivno. U uzorcima viršle dobijeni su sledeći rezultati  $15,7 \pm 0,4$  g/100g (TFE) do  $17,8 \pm 0,1$  g/100g (Soxhlet). Sadržaj masti u uzorcima slanine bio je od  $48,2 \pm 2,5$  g/100g (TFE) do  $48,7 \pm 0,7$  g/100g (Soxhlet). Dobijeni rezultati su ostali dosledni u okviru vrednosti navedenih u poljskim "Tablocama sastava prehrambenih namirnica".

Primena metoda opisanih gore za određivanje sadržaja masti u proizvodima životinjskog porekla zavisi od: svrhe analize, količine masti u uzorku prehrambenog proizvoda i vremena dobijanja rezultata.

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