

Fat determination in manually hydrolyzed samples

FatExtractor E-500: Fat Determination in Food Products according to Weibull-Stoldt after manual hydrolysis

1. Introduction

The determination of fat in food and feed is a routine procedure in quality control and labelling. In this note, the samples are hydrolyzed manually in a heating plate. The Soxhlet extraction is performed with the FatExtractor E-500. Calculation of total fat content follows gravimetrically after the extract has been dried to constant weight.

2. Experimental

Equipment: FatExtractor E-500 Soxhlet, Mixer B-400

Samples: Buttercookies LVU No. 20-11 with certified fat content of 15.67 ± 0.219 g/100 g, Boiled sausage LVU No. 20-01ab with certified fat content of 13.90 g/100 g ± 0.391 g/100 g, Fruit ice cream mixture LVU No. 18-41 with certified fat content of 5.07 g/100 g ± 0.065 g/100 g, Cookies (labelled fat content 15%), breakfast cereal (labelled fat content 12%), pet food pellets (labelled fat content 14%), vanilla icecream (labelled fat content 13%).

Hydrolysis: 2-6 g of sample were weighed in a beaker, added 100 ml of HCl 4M, covered and hydrolyzed for 30 minutes. The hydrolyzate was diluted and filtered. The filter paper was rinsed and dried for 1:30 hour. Samples were analyzed in triplicates.

Extraction: The dried samples were extracted with the parameters shown in table 1:

Table 1: Extraction parameters for FatExtractor E-500 SOX

Step	Time [min] /No. of cycles [-]	Heating level [-]
Solvent Petroleum ether		
Extraction	20 cycles	6
Rinse	5 min	6
SmartDrying	on	-
Solvent volume		110 mL

3. Results

The determined fat contents are presented in Table 2. The results are in good correlation with the certified and labelled values.

Table 2: determined fat content (rsd: relative standard deviation), n=3

Sample	Fat content (%)			Average (%)	Rsd (%)
Buttercookie	15.67	15.82	15.66	15.72	0.58
Fruit ice cream	5.03	4.97	5.05	5.02	0.74
Boiled sausage	13.35	13.97	13.31	13.55	2.74
Cookies	14.81	14.82	14.79	14.80	0.10
Vanilla ice cream	12.42	12.25	12.40	12.36	0.74
Pet food	14.75	14.95	14.90	14.87	0.69
Breakfast cereal	11.74	11.78	11.50	11.67	1.32



4. Conclusion

The determination of fat content in food products following a manual hydrolysis procedure and Soxhlet extraction with BUCHI FatExtractor E-500 provides reliable and reproducible results. The results correspond well to the certified or labelled values.

5. References

- [1] ISO 1443:1973 Meat and meat products -- Determination of total fat content
 - [2] AOAC 963.15 Fat in Cacao Products
 - [3] AOAC 945.16 Oil in cereal adjuncts
 - [4] § 64 LFGB Nr. L 06.00-6: 2014-06 Bestimmung des Gesamtfettgehaltes in Fleisch und Fleischerzeugnissen
- Extraction Reports App
Operation Manual of FatExtractor E-500

For more information, please refer to Application Note 773/2021.