

Fat Determination in Shortbread using SpeedExtractor E-916

The determination of fat in food and feed is a routine procedure for quality assurance and labeling. Fat was determined in butter shortbread after homogenization of the sample and extraction with the SpeedExtractor E-916. The total fat content was determined gravimetrically after the extract has been dried to a constant weight. The fat content of 10.21% corresponds to the value determined with classic Soxhlet.

Introduction

The determination of fat in food and feed is a routine procedure for in quality assurance and labeling. Fat was determined in butter shortbread after homogenization of the sample and extraction with the SpeedExtractor E-916. The solvent was evaporated in parallel using the Multivapor P-6. The total fat content was determined gravimetrically after the extract has been dried to a constant weight.



Figure 1: Shortbread

Experimental

Instrumentation: Mixer B-400, SpeedExtractor E-916, Multivapor P-6 with Vacuum pump V-700 and Controller V-855, drying oven

The homogenized sample was mixed with quartz sand and extracted with the SpeedExtractor using the parameters shown in Table 1. The sample was extracted in triplicate.

Table 1: Extraction method of the SpeedExtractor E-916

Temperature	100 °C
Pressure	100 bar
Solvent	Hexane 100%
Cells	40 ml
Vials	240 ml
Cycles	3
Heat-up	1 min
Hold	5 min
Discharge	4 / 3 / 3 min (1 st /2 nd /3 rd cycle)
Flush with solvent	2 min
Flush with gas	4 min

The total time for the extraction is approx. 60 min and per position, approx. 50 ml solvent are used.

The solvent was evaporated in parallel using the Multivapor P-6 (see Figure 2).

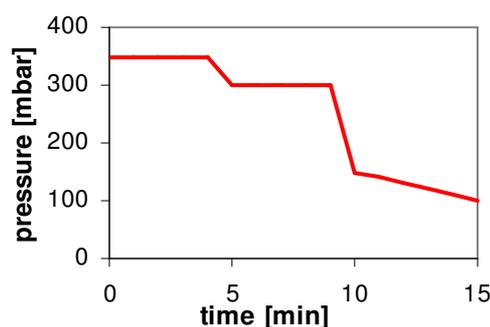


Figure 2. Pressure gradient for evaporating the solvent in the Multivapor P-6

The extracts were then dried to a constant weight in a drying oven (102 °C) and the fat content was calculated.

Results

The determined fat content (Table 3) of 10.20% corresponds to the content obtained when extracting the same sample with Soxhlet extraction. With a fat content of 10.20 % (rsd=0.42%, n=3) was determined.

Table 3: Determined fat contents in short bread

	Fat content [%]
Sample 1	10.25
Sample 2	10.14
Sample 3	10.24
Mean value	10.21
rsd %	0.60

Conclusion

The determination of the fat content in shortbread by solvent extraction using SpeedExtractor E-916 provides reliable and reproducible results that correspond to the results obtained by Soxhlet. The total extraction time is approx. 60 min; per position, approx. 50 ml solvent are used.

References

SpeedExtractor E-916 operation manual

For more detailed information refer to Application note 004/2009