

Fat determination in ice cream

FatExtractor E-500: Soxhlet Extraction after hydrolysis with the HydrolEx H-506 for fat determination in ice cream

1. Introduction

A simple and reliable procedure for fat determination of ice cream samples according to Weibull-Stoldt is introduced. The sample is hydrolyzed with the HydrolEx H-506. The Soxhlet extraction is performed with the FatExtractor E-500. Calculation of total fat content follows gravimetrically after the extract has been dried to a constant weight.

2. Experimental

Equipment: FatExtractor E-500 Soxhlet, HydrolEx H-506

Samples: Fruit ice cream mixture LVU No. 18-41 with certified fat content of 5.07 g/100 g ± 0.065 g/100 g, vanilla ice cream (labelled fat content 13%), chocolate covered ice cream stick (labelled fat content 18%), ice cream with chocolate pieces (labelled fat content 17%).

The samples were added 2x50 mL HCl (4M), and hydrolyzed for 30 minutes using the HydrolEx H-506. The hydrolyzates were diluted, filtered and dried. The extraction was performed according to the parameters shown in Table 1.

Table 1: Extraction parameters for FatExtractor E-500 SOX

Step	Heating level	
Solvent	Petroleum ether	
Extraction	20 cycles	6
Rinse	5 min	6
SmartDrying	On	-
Solvent volume	100 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 (%)
Fruit ice cream mixture	5.07	5.04	5.08	5.06	0.37
Vanilla ice cream	12.38	12.34	12.36	12.36	0.16
Ice cream with chocolate pieces	15.88	15.99	15.93	15.93	0.34
Chocolate covered ice cream	17.37	17.28	17.31	17.32	0.27



4. Conclusion

The determination of fat content in ice cream using the BUCHI HydrolEx H-506 and the FatExtractor E-500 provides reliable and reproducible results. The results correspond well to the certified or labelled values, with low standard deviations. With the FatExtractor E-500 Soxhlet, the time per cycles is reduced significantly. The extraction was accomplished in approximately 70 min.

5. References

- [1] § 64 LFGB 01.00 20 (2013) Bestimmung des Fettgehaltes von Milch und Milchprodukten nach dem gravimetrischen Weibull-Berntrop-Verfahren
- [2] DIN 10342 (1992) Bestimmung des Fettgehaltes von Milch und Milchprodukten nach dem gravimetrischen Weibull-Berntrop-Verfahren

Extraction Reports App

Operation Manual of FatExtractor E-500

For more information, please refer to Application Note 750/2021.