SoxROC Application Note

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Extraction of fat in biscuits

As the extraction might involve the use of hazardous and hot solvent it is strongly recommended to use protective glasses and gloves. The SoxROC Operation Manual chapter 3 Safety should be read before starting any work.

INTRODUCTION

The determination of fat in food and feed samples is a routine procedure in quality assurance and labeling. In a lot of samples fat is not strongly bound to matrix and thus hydrolysis prior to the extraction is not necessary when determining the total fat content. A simple and fast procedure for the total fat determination without hydrolysis in biscuits using SoxROC Extraction Unit is introduced below. The total fat content is determined gravimetrically after the extract is dried to a constant weight.

EXPERIMENTAL

Apparatus

- Mixer
- Analytical balance
- SoxROC Extraction Unit SX-360-A or SX-320-A
- Extraction cups Ø 54 mm, aluminum or glass, compatible with the solvent extraction system
- Drying oven
- Desiccator
- Paper thimbles (33x80 mm)

Reagents and accessories

- Petroleum Ether 40-60 °C
- Boiling stones
- Cotton wool

Samples

Digestive biscuits

Procedure

Weigh the homogenized sample into paper thimbles. Dry the thimbles with samples at 100°C for 1 h. Let cool to room temperature in desiccator.

Carry out the extraction with SoxROC Extraction Unit using the parameters shown in Table 1. Dry the extracts to constant weight in an oven at 100°C and let cool to room temperature in desiccator.

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Table 1. Extraction parameters (SoxROC Extraction Unit)

Sample weight	≈2 g
Solvent	Petroleum Ether 40-60°C
Solvent volume	90 ml
Temperature (glass/aluminum)	150°C/90°C
Boiling /number of reduces	20 min / 4
Rinsing / number of reduces	40 min / 5
Drying	5 min

Note: The solvent volume is correlated to the sample volume/height. During BOILING the sample should be completely immersed in solvent.

CALCULATIONS

Calculate the fat using the formula below.

$$\% \text{ Fat} = (W_3 - W_2)^{\times}100 \, / \, W_1$$

W$_1$ =   Sample weight (g)

W$_2$ =   Extraction cup weight (g)

W$_3$ =   Extraction cup + residue weight (g)

REFERENCES

This Application Note should be used in conjunction with Application Note LA1002 "Application Guide SoxROC Solvent Extraction"

OG1012 SoxROC Operation Guide