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Extraction of Total fat in Pet food

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 and the HydROC Operation Manual 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. Complex matrices typically require acid hydrolysis prior to solvent extraction, to free bound lipids and to facilitate the extraction. A simple and fast procedure for the total fat determination in Pet food is introduced below. The total fat content is determined gravimetrically after the extract is dried to a constant weight.

EXPERIMENTAL

Apparatus

- Mixer
- Analytical balance
- HydROC Hydrolysis Unit SX-110-A
- 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
- Hydrolysis filter 54x80 mm

Reagents and accessories

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

Sample

Cat feed (dry pellets) and dog feed (dry pellets)

Sample preparation

Prepare the sample by using a suitable mixer. Weigh the homogenized sample into hydrolysis filters.

Hydrolysis

Carry out the hydrolysis with HydROC Hydrolysis Unit using 100 ml 4 mol/l HCl for 60 min. Wash to neutral pH and dry the filters before transferring to extraction cups.

Extraction

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.

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 total 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 Manual

OG 1013 HydROC Operation Manual