SFE Application note #501

Fat from Liquid Milk Products and Infant Formula

Introduction

Conventional methods of fat extraction from liquid milk products and infant formulas are time and labor intensive, and require large amounts of hazardous solvents. Supercritical Fluid Extraction (SFE) using CO_2 as a solvent is a solvent-free alternative method for extraction and isolation of fat content from different milk-based nutrition products.

Equipment

- ✓ Applied Separations' *Spe-ed* SFE Supercritical Extraction System

Materials

- ✓ *Spe-ed*™ Matrix (Catalog #7950)
- ✓ Ethanol (denatured)
- ✓ Carbon dioxide (instrument grade)

Method

Weigh 2g of sample into 5g of *Spe-ed* Matrix. Mix the milk sample and *Spe-ed* Matrix thoroughly and pour mixed sample into an extraction vessel. Add 1mL of ethanol to the extraction vessel. Place a preweighed collection vial onto the discharge tube and extract at specified conditions. Remove vial with fat extract and weigh.

Extraction Conditions

Sample:	2.0g
Pressure:	9000 psi
Temperature:	100ºC
CO_2 Flow Rate:	3L/minute (gas)
Collection:	preweighed vial
Extraction time:	25 min. dynamic

Results

Infant Formula Concentrate

	SFE (N=3)	Mojonnier
% Fat	6.71%	6.75%
% RSD	0.59	

Conclusions

Supercritical CO_2 extractions of infant formula were accurate and precise when compared to the standard mojonnier extraction. Hazardous solvents were eliminated with significant savings in sample processing time.

References

1. AOAC Method 989.05
2. JAOAC 71, 898 (1988)

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