

## SCF 501 **The Extraction of Fat from Liquid Milk Products**

### Introduction

Conventional methods of fat extraction from liquid milk products are time and labor intensive, and require large amounts of hazardous solvents. Supercritical Fluid Extraction (SFE) using CO<sub>2</sub> 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*<sup>TM</sup> 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:	100°C
CO <sub>2</sub> 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<sub>2</sub> extractions of liquid milk products 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)