

# Extraction and Detection of Sulfamethazine in Spray-Dried Milk

Shahana Malik<sup>1</sup>, Susan E. Duncan<sup>1</sup>, J. Russell Bishop<sup>2</sup>, and Larry T. Taylor<sup>3</sup>

<sup>1</sup> Department of Food Science and Technology

<sup>2</sup> University of Wisconsin, Center for Dairy Research, Madison 53706

<sup>3</sup> Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg 24061

Processes that reduce moisture content of fluid milk may result in a high concentration of animal drug residues that are undetectable in the fluid milk on the basis of the same weights. The objectives were to determine the amount of sulfamethazine in spray-dried milk powder manufactured from fluid milk contaminated with sulfamethazine and to determine the effectiveness of supercritical fluid extraction as a means to extract sulfamethazine from dry milk powder. Fluid whole (3.25% fat) and skim milks with sulfamethazine added at concentrations of 5, 10, and 100 ppb were spray-dried. Based on total solids, observed concentrations were 493 and 523 ppb in skim and whole dry milk powders, respectively, compared with fluid milk containing 100 ppb of sulfamethazine as determined by HPLC. The increase in sulfamethazine concentration from fluid to dry milk was also measured quantitatively by a microbial receptor assay and an ELISA. Poor recoveries and variability in data were possibly due to binding of sulfamethazine to undetermined milk components. Dry milk powder with measured concentrations of sulfamethazine was treated with supercritical CO<sub>2</sub>.

Sulfamethazine was not detectable in the extracted dry milk powder by microbial receptor assay or ELISA.

**Key Words:** drug residues • milk powder • sulfamethazine • supercritical fluid extraction

Submitted on April 27, 1992

Accepted on August 18, 1993

## This Article

- ▶ [Full Text \(PDF\)](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

## Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Download to citation manager](#)
- ▶ [Get Permissions](#)

## Citing Articles

- ▶ [Citing Articles via Google Scholar](#)

## Google Scholar

- ▶ [Articles by Malik, S.](#)
- ▶ [Articles by Taylor, L. T.](#)
- ▶ [Search for Related Content](#)

## PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Malik, S.](#)
- ▶ [Articles by Taylor, L. T.](#)