



## **A Low-Cost Approach for the Determination of Tetracyclines in Fermented Milk Products Using Solid Phase Extraction Based on Gossypium Fibres**

Thendo Tambani, Babra Moyo, Nikita Tavengwa

University of Venda, Thohoyandou, South Africa

### **Abstract**

The presence of tetracycline residues in milk products may pose a health risk to consumers. One of the key challenges in ensuring food safety is the availability of fast, cheap, sensitive and reliable analytical methods for the analysis of these food contaminants. In this study, gossypium fibres were evaluated as a potential biosorbent in the extraction of tetracycline, oxytetracycline and chlortetracycline from fermented milk products using solid phase extraction. Optimization parameters that could affect the extraction efficiency of the proposed technique including volume of elution solvent, concentration of elution solvent, mass of the sorbent, sample pH, salt addition and desorbing solvent were optimized. Analysis was performed by UV/Vis spectrophotometry and the LC-Q-TOF/MS. Validation parameters such as limit of detection, limit of quantification and recoveries were established. Linearity in the range of 20-500  $\mu\text{g kg}^{-1}$  was obtained with regression coefficients ranging from 0.9967 to 0.9988. Recoveries of spiked blank samples at three levels (75, 200 and 300  $\mu\text{g kg}^{-1}$ ) ranged from 41% to 107% with RSDs between 1.91% and 13.59%. Obtained LODs and LOQs ranged from 0.0623 to 0.9543  $\mu\text{g kg}^{-1}$  and 0.1888 to 0.5400  $\mu\text{g kg}^{-1}$ , respectively. No tetracyclines were detected in sour milk and yogurt samples.

### **Biography: Babra Moyo**

Babra is currently a Food Chemistry Laboratory Technician at the University of Venda and recently submitted my MSc (Chemistry) dissertation for examination.