

Detection of Adulterant Residues in UHT Milk Products using ATR-FTIR Spectroscopy

ABSTRACT

Milk adulteration has been done to gain economic benefit by which the quality of milk is purposely compromised either by combining or substituting important ingredients of milk with adulterants. The objectives of this study were to determine the milk quality parameters of adulterated and unadulterated milk products through quality analysis and to investigate the ATR-FTIR spectroscopy technique in detection of adulterant residues in milk products. UHT milk samples were used with three common adulterants (melamine, formalin, anionic detergent) in five different concentrations (0.2%, 0.8%, 1.2%, 1.5% and 2.0%). Quality analysis was done on unadulterated milk and adulterated milk samples. Results showed that there were no significant differences between them. Thus, ATR-FTIR spectroscopic analysis was used for the qualification of adulterants in the wavenumber range of 4000cm⁻¹ to 500cm⁻¹. These results show the potential of FTIR spectroscopy as a rapid and sensitive technique for the detection of adulterant residues in UHT milk products.