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Occurrence of aflatoxin M_1 in randomly selected North African milk and cheese samples

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Abstract

Forty-nine samples of raw cow's milk and 20 samples of fresh white soft cheese were collected directly from 20 local dairy factories in the north-west of Libya and analysed for the presence of aflatoxin M_1 (AFM_1). The samples were analysed using a high-performance liquid chromatography technique for toxin detection and quantification. Thirty-five of the 49 milk samples (71.4%) showed AFM_1 levels between 0.03 and 3.13 ng ml^{-1} milk. Multiple analyses of five milk samples free of AFM_1 artificially contaminated with concentrations of AFM_1 at 0.01, 0.05, 0.1, 1.0 and 3.0 ng ml^{-1} showed average recoveries of 66.85, 72.41, 83.29, 97.94 and 98.25%, with coefficients of variations of 3.77, 4.11, 1.57, 1.29 and 0.54%, respectively. Fifteen of 20 white soft cheese samples (75.0%) showed the presence of AFM_1 in concentrations between 0.11

and 0.52 ng g^{-1} of cheese. Multiple assays of five cheese samples free of AFM_1 spiked with different concentration of AFM_1 (0.1, 0.5, 1.0 and 3.0 ng g^{-1}) showed average recoveries of 63.23, 78.14, 83.29 and 88.68%, with coefficients of variation of 1.53, 9.90, 4.87 and 3.79%, respectively. The concentrations of AFM_1 were lower in the cheese products than in the raw milk samples.

Keywords:

aflatoxin M1 | cheese | milk | immunoaffinity columns | high-performance liquid chromatography (HPLC)

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