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Occurrence of aflatoxin M_1 in domestic milk in Japan during the winter season

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Abstract

A total of 208 samples of commercial pasteurized milk gathered from retail outlets across Japan during the winter season were analysed for aflatoxin M_1 (AFM_1). Japan was divided into 11 regions from north to south, and nine to 45 milk samples from each region were randomly purchased between December 2001 and February 2002. Each milk sample was cleaned up by an immunoaffinity column, and AFM_1 was quantified by liquid chromatography with fluorescence detection in four independent laboratories. The limit of detection of the method was 0.001 μg kg^{-1}. The identity of the putative AFM_1 in milk sample was confirmed by the formation of AFM_1 hemi-acetal with trifluoroacetic acid. Based on the results obtained with spiked samples (0.05 μg AFM_1 kg^{-1}), the mean recovery was 91.4%, the relative standard deviation for repeatability was 4.6%, and the relative standard deviation for reproducibility was 8.0% among four independent laboratories. AFM_1 was detected in 207 (99.5%) of 208 milk samples at 0.001–0.029 μg kg^{-1}, with a mean of 0.009 μg kg^{-1} and a 90th percentile of 0.014 μg

kg^{-1}. No significant difference of the level of AFM_1 contamination was observed among the regions.

Keywords:

survey | aflatoxin M1 | milk | immunoaffinity column | liquid chromatography

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