

160 Views | 43 CrossRef citations to date | 0 Altmetric

Original Articles

# Occurrence of aflatoxin M<sub>1</sub> in domestic milk in Japan during the winter season

M. Nakajima, S. Tabata, H. Akiyama, Y. Itoh, T. Tanaka, H. Sunagawa, ... show all

Pages 472-478 | Received 05 Sep 2003, Accepted 18 Feb 2004, Published online: 20 Feb 2007

 Cite this article  <https://doi.org/10.1080/02652030410001677817>

Sample our  
Environment & Agriculture  
Journals  
>> [Sign in here](#) to start your access  
to the latest two volumes for 14 days

 Full Article

 Figures & data

 References

 Citations

 Metrics

 Reprints & Permissions

[Read this article](#)

 Share

## 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<sub>1</sub> (AFM<sub>1</sub>). 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<sub>1</sub> was quantified by liquid chromatography with fluorescence detection in four independent laboratories. The limit of detection of the method was 0.001 µg kg<sup>-1</sup>. The identity of the putative AFM<sub>1</sub> in milk sample was confirmed by the formation of AFM<sub>1</sub> hemi-acetal with trifluoroacetic acid. Based on the results obtained with spiked samples (0.05 µg AFM<sub>1</sub> kg<sup>-1</sup>), 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<sub>1</sub> was detected in 207 (99.5%) of 208 milk samples at 0.001–0.029 µg kg<sup>-1</sup>, with a mean of 0.009 µg kg<sup>-1</sup> and a 90th percentile of 0.014 µg kg<sup>-1</sup>. No significant difference of the level of AFM<sub>1</sub> contamination was observed among the regions.

Keywords:

survey   aflatoxin M1   milk   immunoaffinity column   liquid chromatography

## Acknowledgement

Work was supported in part by a grant for Scientific Research Expense for Health and Welfare Programs from the Japanese Government.

### Related Research Data

[Investigation of aflatoxins contamination in foods and foodstuffs.](#)

Source: Food Hygiene and Safety Science (Shokuhin Eiseigaku Zasshi)

[Reverse Phase Liquid Chromatographic Determination and Confirmation of Aflatoxin M1 in Cheese](#)

Source: Journal of AOAC INTERNATIONAL

[Natural occurrence of aflatoxin M1 in imported and domestic cheese. Studies on mycotoxins in foods. VI.](#)

Source: Food Hygiene and Safety Science (Shokuhin Eiseigaku Zasshi)

[Cyclopiazonic acid in combination with aflatoxins, zearalenone and ochratoxin A in Indonesian corn](#)

Source: Mycopathologia

[Occurrence of mycotoxins in raw ingredients used for animal feeding stuffs in the United Kingdom in 1992](#)

Source: Food Additives & Contaminants

[Determination of aflatoxin M1 in milk by reversed-phase high-performance liquid](#)

People also read

Recommended articles

Cited by  
43

[Exposure to aflatoxins in Japan: risk assessment for aflatoxin B1 >](#)

Y. Sugita-Konishi et al.

Food Additives & Contaminants: Part A

Published online: 5 Jan 2010

## Information for

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

## Opportunities

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

## Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

## Help and information

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

## Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2026 Informa UK Limited [Privacy policy](#)

[Cookies](#) [Terms & conditions](#) [Accessibility](#)

Registered in England & Wales No. 01072954  
5 Howick Place | London | SW1P 1WG



Taylor & Francis  
by informa