

Occurrence of Aflatoxin M1 in cheese products commonly available in Sri Lankan market

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Aflatoxins (AFs) are a group of mycotoxins produced by certain fungi of *Aspergillus* spp. Intake of aflatoxin B1 (AFB1), B2 (AFB2), G1 (AFG1), and G2 (AFG2) contaminated feed can affect the health and productivity of animals. AFM1 is a hydroxylated metabolite of AFB1 formed inside the animal body which is excreted into milk of cows consumed AFB1 contaminated feed. Consumption of AFs contaminated dairy products causes negative health effects in consumers. This study determined the occurrence and levels of AFM1 in processed cheese (n=28), hard cheese (n=14), semi-hard cheese (n=5), and soft cheese (n=3) representing seven popular brands available in the local market. The samples were analyzed by an Ultra High-Performance Liquid Chromatography Fluorescence Detector method. AFM1 was detected in 40 samples (0.11-14.43 ppb; 80.0%) out of the 50 cheese samples analyzed, and 17 (34.0%) had AFM1 levels exceeding the maximum permitted limit set by Codex Alimentarius Commission (0.5 ppb). Further, 34 samples (68.0%) had AFM1 levels above the regulatory level of the European region (0.25 ppb) and 10 samples (20.0%) violated the Sri Lankan maximum limit of 1 ppb. Thirteen out of the 14 hard cheese (0.11-14.43 ppb) and all semi-hard cheese samples (0.29-0.65 ppb) contained AFM1. Most of the soft (66.7%; 0.35-0.45 ppb) and processed (71.4%; 0.11-1.35 ppb) cheese samples had AFM1. Hard cheese products which have more milk caseins and low water content had higher AFM1 levels compared to other cheese types. Many of the locally manufactured cheese products available in the Sri Lankan market may pose health risks to consumers. Therefore, it is important to establish regulations on par with international standards and monitor the compliance of products in the market. Further, regulations to control AFs in animal feed will support the efforts to minimize AF contamination in milk and dairy products.

Keywords: AFM1, cheese, UHPLC, consumer safety, food regulations

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