Aflatoxin M1 in raw milk and aflatoxin B1 in feed from household cows in Singida, Tanzania

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Abstract

Aflatoxin M1 (AFM1) contamination in raw milk from household cows fed with sunflower seedcakes or sunflower-based seedcake feeds was determined in 37 milk samples collected randomly from different locations in Singida region, Tanzania. Aflatoxin B1 (AFB1) contamination in sunflower-based seedcake feed was determined in 20 feed samples collected from the same household dairy farmers. The samples were analysed by RP-HPLC using fluorescent detection after immunoaffinity column clean-up. Recoveries were 88.0% and 94.5%, while the limits of detection (LOD) were 0.026 ng mL-1 and 0.364 ng g-1 for AFM1 and AFB1, respectively. Of the analysed cow's milk samples, 83.8% (31/37) contained AFM1, with levels ranging from LOD to 2.007 ng mL-1, exceeding both the European Commission (EC) and Tanzania Food and Drug Authority (TFDA) limit of 0.05 ng mL-1. Of the contaminated samples, 16.1% exceeded the Codex Alimentarius limit of 0.5 ng mL-1. AFB1 was present in 65% (13/20) of the feed samples with levels ranging from LOD to 20.47 ng g-1, 61.53% exceeding the TFDA and EC maximum limits of 5 ng g-1 for complete dairy animal feed. The observed AFM1 and AFB1 contamination necessitates the need to raise awareness to dairy farmers in Tanzania to safeguard the health of the end-users.

Keywords: Aflatoxin M1, cow's milk, aflatoxin B1, feed, Singida, Tanzania