AFLATOXIN M1 LEVEL IN RAW MILK AND UHT MILK CONSUMED IN KOSOVO DURING 2021-2022

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Abstract

Aflatoxin M1 is a toxic metabolite produced by certain species of Aspergillus. It can be found in milk and dairy products if cows consume feed contaminated with aflatoxin B1 (AFB1). Aflatoxin M1 is a potential human carcinogen. It is toxic to the liver and can cause liver damage at high doses. The aim of this research was to determine the level of aflatoxin M1 (AFM1) in raw cow’s milk in the region of Peja, one of the biggest regions of Kosovo, and in the ultra-high temperature (UHT) treated cow’s milk consumed in Kosovo that was found in supermarkets which was produced in Kosovo and imported from different countries, also.

From August 2021 until April 2022, 120 raw milk samples have been collected from small dairy farms in one of the biggest regions of Kosovo, called Peja, and 40 UHT local and imported cow milk samples imported from different countries and found in supermarkets were collected and analyzed for aflatoxin M1 (AFM1), a toxic metabolite of aflatoxin B1, which may contaminate animal’s feed. The contamination level of aflatoxin M1 was determined using enzyme-linked immunosorbent assay (ELISA).

A total of 75 (47%) samples were contaminated with AFM1 at levels > limit of detection (LOD) (0.002 μg/L). Among them, 33% of UHT milk samples and 52% of raw milk samples resulted positive in AFM1. Only one sample from UHT imported milk, exceeded the European Union maximum level of 0.05 μg/L, with the level of AFM1 of 0.165 μg/L. The maximum AFM1 level for raw milk was at 0.015 μg/L. There was no relevant difference between the seasons regarding to AFM1 frequency and levels for raw milk; although for the UHT local and imported milk samples there was a difference in AFM1 level, with UHT imported milk with higher AFM1 concentration.

In conclusion, this study shows that the frequency of AFM1 contamination of raw milk in the region of Peja in Kosovo in the time interval between summer 2021 and spring 2022, was lower than the results reported on the previous studies for this region, and all the samples have been compliant with the European Union regulations for AFM1. This might show an increase in awareness of the proper storage of animal feeding stuff by farmers. As for the UHT imported milk samples, the results show that regular institutional monitoring is necessary.

Key words: Raw milk, UHT milk, ELISA, Aflatoxin M1.