

The Use of Microbiological Methods to Reduce Aflatoxin M1 in Cheese

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Abstract : Studies have shown evidence of human exposure to aflatoxin M1 due to the consumption of contaminated milk and dairy products (mainly cheeses). This poses a great risk to public health, since milk and milk products are frequently consumed by a portion of the population considered immunosuppressed, children and the elderly. Knowledge of the negative impacts of aflatoxins on health and economics has led to investigations of strategies to prevent their formation in food, as well as to eliminate, inactivate or reduce the bioavailability of these toxins in contaminated products. This study evaluated the effect of microbiological methods using lactic acid bacteria on aflatoxin M1 (AFM1) reduction in Minas Frescal cheese (typical Brazilian product, being among the most consumed cheeses in Brazil) spiked with 1 µg/L AFM1. Inactivated lactic acid bacteria (0,5%, v/v de *L. rhamnosus* e *L. lactis*) were added during the cheese production process. Nine cheeses were produced, divided into three treatments: negative controls (without AFM1 or lactic acid bacteria), positive controls (AFM1 only), and lactic acid bacteria + AFM1. Samples of cheese were collected on days 2, 10, 20 and 30 after the date of production and submitted to composition analyses and determination of AFM1 by high-performance liquid chromatography. The reductions of AFM1 in cheese by lactic acid bacteria at the end of the trial indicate a potential application of inactivated lactic acid bacteria in reducing the bioavailability of AFM1 in Minas frescal cheese without physical-chemical and microbiological modifications during the 30-day experimental period. The authors would like to thank São Paulo Research Foundation - FAPESP (grants #2017/20081-6 and #2017/19683-1).

Keywords : aflatoxin, milk, minas frescal cheese, decontamination

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