عنوان مقاله:

Identification of Dairy Fungal Contamination and Reduction of Aflatoxin M۱ Amount by Three Acid and Bile Resistant Probiotic Bacteria

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خلاصه مقاله:

Aflatoxins (AFs) released by fungi are observed in the cow's milk even after pasteurization. Aflatoxin M۱ (AFM۱) has particularly an incredible clinical significance, as a critical carcinogenic agent for humans. Several strategies have been implemented for lowering the AFM۱ amount, such as the employment of probiotics, particularly lactobacilli or lactic acid bacteria (LAB). However, this strategy has not been applied routinely until today. This study aimed to evaluate the effect of three LABs on the reduction of AFM۱ in traditional milk and cheese samples. In total, ۸۵ milk (n=۴۵) and cheese (n=۴۰) samples were obtained from the open markets of Shiraz, Iran, from February to June ۲۰۱۸. Additionally, the AFM۱ levels were evaluated, compared to those of the National Iranian Standard. The data were then analyzed in SPSS software (version ۲۰) through the Chi-square test. Statistical analysis was performed at a ۹۵% confidence level (p-value of <۰.۰۰۰۰۱). Out of ۵۰ purchased LABs, the efficient antifungal property and resistance to bile salts were observed in five strains. The mean value of these five strains was calculated after adding ۵ ppm AFM۱, compared to natamycin. The strains with a reduction in AFM۱ level were sequenced and registered in the NCBI database.In total, ۱۵ samples with contamination higher than the allowed limit included Penicillium spp, Aspergillus niger, Saccharomyces cerevisia, Saccharomyces paradoxus, and Yarrowia lipolytica.The results also showed reduced AFM۱ levels in three LAB-treated strains. Lactobacillus fermentum CECT۵۶۲ (T), Lactobacillus brevis ATCC۱۴۸۶۹ (T), and Enterococcus faecium LMG ۱۱۴۲۳ (T) had this capability to ۰.۰۵, ۰.۰۳, and ۰.۰۳ respectively. The National Iranian Standard should be implemented to have control over traditional dairy products with more care. The three LABs selected in the current study revealed a significant effect on reducing AFM۱ levels in traditional milk and cheese.

کلمات کلیدی:

Aflatoxin M۱, Contamination, Lactobacillus, Probiotics