

The Effect of Probiotic Bacteria on Aflatoxin M1 Detoxification in Phosphate Buffer Saline

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Abstract : Aflatoxin M1 (AFM1) is a major toxic and carcinogenic molecule in milk and milk products. Therefore, it poses a risk for public health. Probiotics can be biological agent to remove AFM1. The aim of this study is to evaluate the effect of probiotic bacteria on AFM1 detoxification in phosphate buffer saline. The PBS samples artificially contaminated with AFM1 at concentration 100 pg/ml were prepared with probiotics bacteria that including monoculture (*L. plantarum*, *B. bifidum* ATCC, *B. animalis* ATCC 27672) and binary culture (*L. bulgaricus* + *S. thermophiles*, *B. bifidum* ATCC + *B. animalis* ATCC 27672, *L. plantarum*+*B. bifidum* ATCC, *L. plantarum*+ *B. animalis* ATCC 27672). The samples were incubated at 37°C for 4 hours and stored for 1, 5 and 10 days. The toxin was measured by the ELISA. The highest levels of AFM1 binding ability (63.6%) in PBS were detected yoghurt starter bacteria, while *L. plantarum* had the lowest levels of AFM1 binding ability (35.5%) in PBS. In addition, it was found that there was significant effect of storage on AFM1 binding ability in all groups except the one including *B. animalis* ($p < 0.05$). Consequently, results demonstrate that AFM1 detoxification by probiotic bacteria has a potential application to reduce toxin concentrations in yoghurt. Moreover, probiotic strains can react with itself as synergic or antagonist.

Keywords : aflatoxin M1, ELISA, probiotics, storage

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