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The effect of inulin on aflatoxin M1 binding ability of probiotic bacteria in yoghurt

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Statement of the Problem: Aflatoxin M1 (AFM1) represents mutagenic, carcinogenic and immunosuppressive properties, and shows adverse effect on human health. It is emphasized that probiotic bacteria can reduce the level of toxin by AFM1 binding ability in recent studies. Moreover, the studies show that inulin is a prebiotic to improve the ability of probiotic bacteria. Therefore, the aim of the study is to investigate the effect of inulin on AFM1 binding ability of some probiotic bacteria.

Methodology & Theoretical Orientation: Yoghurt samples were manufactured with artificially contaminated skimmed milk powder with 100 pg/ml AFM1. Different samples were prepared using *L. bulgaricus* and *S. thermophilus* as yoghurt starter bacteria and *L. plantarum*, *B. bifidum ATCC, B. animalis ATCC 27672* as probiotic bacteria. Moreover, the same work groups were prepared with inulin (4%). The samples were incubated at 42°C for 4 hours, then stored for three different time interval (1, 5 and 10 days). The toxin was measured by the ELISA.

Findings: When inulin was added to work groups, there was significant change AFM1 binding ability at least one sample in all groups except the one with *L. plantarum* ($p<0.05$). The highest levels of AFM1 binding ability (68.7%) was found in *B. bifidum* and inulin added samples, while the lowest levels of AFM1 binding ability (47.2%) was found in B. animalis and inulin added samples. The most impressive effect of inulin was found on *B. bifidum*. In this study, it was obtained that there was a significant effect of storage on AFM1 binding ability in the all groups with inulin except the one with *L. plantarum* ($p<0.05$).

Conclusion & Significance: Results show that AFM1 detoxification by probiotics has a potential application to reduce toxin concentrations in yoghurt. Besides, inulin has different effects on AFM1 binding ability of each probiotic bacteria strain.

Biography

Sumeyra Sevim has gratuated from Department of Nutrient and Dietetics, Hacettepe University in 2013 and Master's degree in Food Service System at Hacettepe University, then she completed her Master's degree which is related to AFM1 detoxification by probiotic bacteria in 2016. She is still a PhD student. She wants to work on probiotic bacteria for her PhD thesis.

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