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**The Thesis Submitted for the Degree of Master of Science (In the
field of Food Science And Technology)**

The ability of native *Lactobacillus* to reduce the Aflatoxin B1 in gastrointestinal condition

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Abstract:

Mycotoxins are a large group of secondary metabolites produced by filamentous fungi that pose serious risks to human and animal health. Aflatoxin B1 has the highest toxicity among different toxins. Therefore, native strains of *Lactobacillus casei* MT.ZH493, *Lactobacillus plantarum* MT.ZH293 and *Lactobacillus pentosus* MT.ZH693 were used to reduce aflatoxin B1. The strains were anaerobically activated in MRS broth medium at 37 ° C for 24 h. Removal of aflatoxin toxin and reversibility of aflatoxin bond with bacteria were evaluated at 0, 24, 48 and 72 hours in PBS medium at pH 7.3 at 37 ° C. In the next step, the stability of aflatoxin bonding with bacteria was measured at pHs 7, 3 and 8 at 37 ° C. The supernatant obtained from each of the steps was injected into the HPLC by centrifugation containing non-transplanted aflatoxin after filtration with a 0.45 µm surge filter. The supernatant containing non-bonded aflatoxin obtained from each steps after filtration with a 0.45-µm pore size filter was injected into the HPLC. The highest amount of aflatoxin removal at 0 and 24 h incubation time was 87.32% and 81.08% by *Lactobacillus pentosus* MT.ZH693 and at 48 and 72 h incubation time was 99.91% and 99.76% by *Lactobacillus plantarum* MT.ZH293, respectively. During 72 hours incubation, *Lactobacillus pentosus* MT.ZH693 showed the lowest (5.3%) and *Lactobacillus plantarum* MT.ZH293 showed the highest (46.05%) reversibility of aflatoxin bonding with bacteria. Regarding the effect of different pHs on removal of aflatoxin B1 strain of *Lactobacillus pentosus* MT.ZH693 with 22.75% toxin released aflatoxin showed the highest stability and *Lactobacillus plantarum* MT.ZH293 with 71.5% showed lowest stability. The results showed that the native *Lactobacillus* strains well inhibited aflatoxin B1.

Key words: Aflatoxin B1, Native *Lactobacillus*, Biological control, High performance liquid chromatography