

DETOXIFICATION OF *LACTOBACILLUS RHAMNOSUS* AS PROBIOTIC IN YOGHURTAzin Karimi ¹, mohammad Goli ^{2*}, M.H Marhamatizadeh^{1&2} Department of food science of technology, Islamic Azad University of Isfahan (Khorasgan)³ Food Hygiene Department, Veterinary Faculty, Kazerun Branch, Islamic Azad University, Kazerun

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Introduction: Mycotoxin is a fungal secondary metabolite that can contaminate food and feed and also cause toxic effects on a higher organism in both human and animals. Aflatoxin, the natural occurring mycotoxins are produced by various species of *Aspergillus*, a fungus especially, *Aspergillus flavus* and *Aspergillus parasiticus*. They have mutagenic, carcinogenic and also teratogenic effects, reported to be involved in various health complications including liver cancer. Aflatoxin B1 (AFB1) has been known as the most potent toxin among various aflatoxins. When aflatoxin B1 and B2 contaminated food or feed is consumed, the toxins are metabolized to aflatoxins M1 and M2 and excreted into the tissues, biological fluids, and milk of lactating animals, including breast milk. Many methods suggested for control of aflatoxins such as chemical, physical and biological, but a great chance for reducing the presence of aflatoxins in food products is implemented through the utilization of certain types of nonpathogenic bacteria, such as the group of lactic acid bacteria (LAB). *Lactobacillus rhamnosus* is a Gram-positive bacterial strain of the probiotic bacteria which really is one of the most effective micro-organisms to bind aflatoxin. This study presents the effect of *Lactobacillus rhamnosus* in the reduction rate of aflatoxin in yogurt so that their lethal effects could be minimized.

Materials and Methods: Milk contaminated artificially with aflatoxin M₁ (AFM₁) at a level of 0.1 (ppb). Then after pasteurization, starter YC-280 (2%) and *Lactobacillus rhamnosus* (1, 3, 5, gr/50 ml) were added and incubated at 42 °C. The sample's AFM₁ concentration was determined by a competitive Enzyme-Linked Immune Sorbent Assay (ELISA) method at the days of 2, 7, 14, 21 of refrigeration. The analysis of variance was done by SPSS 16 for determining the difference as the binding amount of aflatoxin M1 by different treatments of dose of bacteria. In addition, ANOVA variance analysis was also done for comparison of binding AFM₁ in yogurt. DUNCAN test was used for determining the different groups after the variance analysis.

Result and discussion: The analysis of yogurt during the 21st day of refrigeration with various treatments of *Lactobacillus rhamnosus* showed that the maximum level of binding about 71.7% was for the treatment of 1 gr/50 ml at the second day, and the minimum level of binding about 83.8% was for the 5 gr/50 ml at the 21st day of refrigeration. This study showed that many of the tested yogurts had significant differences ($p < 0.05$) in the reduction of the level of AFM₁. The probiotic effect of *Lb. rhamnosus* is a safe method that can be used for detoxification without losing nutritional value.



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