TITLE: INFLUENCE OF *Lactobacillus acidophilus* AND PREBIOTICS IN THE BIOACESSIBILITY OF AFLATOXIN B_1 IN MILK

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ABSTRACT

Milk is a major source of essential nutrients for the growth, development and maintenance of human health. However, it can also be a vehicle for toxic agents, causing serious hazards in individuals who consume it especially children. Aflatoxins are among the main chemical contaminants in milk, which are important secondary fungal metabolites in human and animal health. Between aflatoxin analogues identified to date, aflatoxin B_1 (AFB_1) is the most prevalent and most toxic. When ingested by animals it undergoes hepatic biotransformation partially converting to aflatoxin M_1 (AFM_1), which can be excreted in the milk. Furthermore recent studies have demonstrated that not only the hydroxylated compound (AFM_1) is present in milk but also its precursor (AFB_1). Once present in milk, these aflatoxins can withstand most treatments (pasteurization and ultra-high-temperature processed) to obtain dairy products. Therefore, may be present in cheeses and yogurts. This study aimed to evaluate the influence of *Lactobacillus acidophilus* isolated and in association with prebiotics (inulin, oligofrutose, β-glucan and polydextrose) on the aflatoxins AFB_1 bioacessibility in artificially contaminated milk, using an *in vitro* digestive model, employing a *Plackett-Burman* design to assess the effects of six variables. When compared to the positive control (whole milk fortified with aflatoxin) the reduction of AFB_1 bioacessibility in milk after using a digestive model ranged from 22.37 to 71.36%. Based on the evaluation of all the effects studied in reducing contamination and bioaccessibility of AFB_1 in milk, the best test of this study was trial with a higher AFB_1 concentration (6.5 $\mu g.L^{-1}$), incubation time 0 h, addition of probiotic and prebiotic inulin (0.75% $w.w^{-1}$). Furthermore, the addition of prebiotics to *L. acidophilus* significantly decreased the percentage of bioaccessibility The results of this work suggest that the *L. acidophilus* isolated or in combination with prebiotics tested could help to reduce the risk of ingestion of AFB_1 through consumption of contaminated milk.

Keywords: Lactic acid bacteria; probiotic; mycotoxins; digestibility in vitro

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