

TITLE: THE EFFICIENCY OF *SACCHAROMYCES CEREVISIAE* TO BINDING AFLATOXIN M₁ IN MINAS FRESCAL CHEESE

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ABSTRACT:

Aflatoxins are secondary metabolites of some *Aspergillus spp.* Aflatoxin M₁ (AFM₁) is a product of aflatoxin B₁ (AFB₁) metabolism in the liver, consequently, it is carried over to dairy products.. Yeasts are non-photosynthetic microorganisms with the separate nucleus and complex life cycle. They are larger than the bacteria, usually spherical and reproduce by budding. Their main function is to perform alcoholic fermentation, although they are capable of producing enzymes and vitamins. The primary substrate for yeasts are fermentable sugars, which are transformed primarily into ethanol, carbon dioxide and biomass when under oxygen limiting conditions. It is known that *Saccharomyces cerevisiae* (SC) can eliminate mycotoxins from feed through by different actions. The efficiency of these yeast to binding AFM₁ can be attributed to the esterified glucomannan, which is extracted from the yeast cell wall. So far there is no study in Brazil that has used SC to binding AFM₁ in Minas fresh cheese. Therefore, the current study was aimed tested the capacity of *Saccharomyces cerevisiae* binding AFM₁ in Minas fresh cheese contaminated artificially (2,5 µg/kg). The cheeses were produced in the Laboratory of Microbiology and Mycotoxicology of Food from the Faculty of Animal Science and Food Engineering of the University of São Paulo. The cheeses were produced in triplicate. Twelve cheeses with 250 grams each were prepared for the tests of the four treatments: cheese, cheese with SC, cheese with AFM₁ and cheese with AFM₁ and SC. The SC were heat-killed being inactivated by boiling at 100°C for 1 hour previously the assays and were used at concentration 10¹⁰ CFU/mL. The efficiency of SC to binding AFM₁ was assessed over time the determinations of AFM₁ in the contaminated cheeses were realized in the second day and in the thirtieth day after the manufacturing. AFM₁ quantification in cheese achieved by injection into a HPLC system. The limit of detection for AFM₁ was 0.017 µg/kg. The cheeses of the control groups (cheeses without AFM₁) did not show any level of AFM₁, endorsing that the milk used to produce the cheeses did not contain AFM₁. In the groups containing AFM₁, cheese with AFM₁ and cheese with AFM₁ and SC, a reduction percentage of 64% and 100% was observed respectively, during the experimental period. The SC showed a high efficiency to binding AFM₁ in Minas frescal cheeses.

Keywords: Dairy products, detoxification, mycotoxins, yeasts

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