

ABILITY OF *Saccharomyces cerevisiae* TO REDUCE AFLATOXIN M₁ IN MINAS FRESCAL CHEESE AND EVALUATION OF BINDING BY SCANNING ELECTRON MICROSCOPY

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Abstract: 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. It is known that *Saccharomyces cerevisiae* (SC) can eliminate mycotoxins from feed through by different actions. The ability of these yeast to binding AFM₁ can be attributed to the esterified glucomannan. The present study aimed tested the ability of SC to reduce AFM₁ in Minas frescal cheese contaminated artificially (2.5 µg/kg) and evaluate the probable binding of SC to AFM₁ by scanning electron microscopy (SEM). The cheeses were produced in triplicate in the Laboratory of Microbiology and Mycotoxicology of Food from the Faculty of Animal Science and Food Engineering of the University of São Paulo. 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 used inactivated at concentration 10¹⁰ CFU/mL. The ability of SC to reduce AFM₁, and the binding between SC and AFM₁, were evaluated over time and the AFM₁ determinations on the cheeses were performed on the second day and the thirtieth day after manufacturing. AFM₁ quantification in cheese achieved by injection into a HPLC system (limit of detection 0.017 µg/kg) and the evaluation of binding was performed by SEM. Cheeses without AFM₁ did not show any level of AFM₁. In the groups containing AFM₁, cheeses with AFM₁ and SC, obtained a reduction percentage of 38%. SEM analysis demonstrated that SC is able to adsorb AFM₁, which appeared as small patches on the wall of SC cells, corroborating with the result obtained in the quantification. SC showed a good reduction capacity of AFM₁.

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