(P45) Control of Aflatoxigenic fungi and mycotoxins production by lactobacillus species

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Molds play an important role in spoilage of food products. It is estimated that 5 to 10% of the world food's production is lost due to fungal contamination. Further, certain fungal species produce highly toxic metabolites designated of mycotoxins. Aflatoxins are the most toxics because they are proven carcinogenic. Biopreservation, defined as the control of one organism by another, has received much attention in recent years. In this field, lactic acid bacteria (LAB) are of great interest to be used as natural biopreservatives since they have broad probiotic properties and have been used traditionally in fermentation processes.

The aim of this work was to demonstrate the potential of *Lactobacillus* species to control the occurrence of aflatoxigenic fungi and their mycotoxins. For that, several aflatoxigenic species such as *Aspergillus flavus*, *A. parasiticus*, *A. nomius*, *A. tamari*, *A. arachidicola* and *A. minisclerotigenes* were cultured on MEA plates supplemented with 10% of sterile supernatant of different *Lactobacillus* species (obtained from liquid MRS cultures). Supernatants of most active strains inactivated with heat, proteases and NaOH (for pH neutralization) were also tested and compared with untreated ones. The fungal radial growth and the concentration of aflatoxins, cyclopiazonic acid and sterigmatocystin produced in each plate were determined and compared with controls.

L. casei LAB55 and *L. plantarum* LAB7 supernatants were the most active strains. Radial growth of *A. flavus* after 7 days of incubation at 25 ºC was reduced approx. by 31% and 25%, respectively. Aflatoxins production were inhibited approx. by 97 and 87%, respectively. Those reduction decreased slightly over 24 days of cultivation reaching at the end, about 13% and 70%

for both strains and for growth and aflatoxins, respectively. The inhibitory properties of those strains was reverted when supernatants were treated with proteolytic enzymes or their pH adjusted to 7.

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