

Management and mitigation strategies for mycotoxins: the biological solutions

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ABSTRACT

Mycotoxins are toxic secondary metabolites produced by fungi that are found worldwide in many food products. They are a diverse group of chemical compounds that possess a multiplicity of toxic properties and affect human and farm animal health. Additionally, they cause significant economic losses. The problem of mycotoxins results mainly from fungal growth on crop cultures at the pre- or post-harvest stages. Implicated fungi belong mostly to *Aspergillus*, *Penicillium*, *Fusarium*, *Alternaria* and *Claviceps* genera. For these reasons, mycotoxins presence in foods should be monitored, and their levels reduced as low as technologically possible. In recent years, several biological solutions have been studied and developed to mitigate the adverse effects of mycotoxins. These strategies can be divided into three main type of action: i) Biocontrol, in this case, defined as the control of mycotoxigenic fungal growth by other microorganisms; ii) Adsorption, which refers to the use of microorganism cells to bind mycotoxins; and iii) Biotransformation, when microorganisms or pure enzymes are used to degrade or transform mycotoxins into non-toxic compounds. This presentation will revise some of the main achievements done in this field in the last years and present the work done at the Centre of Biological Engineering related to this thematic. Presented topics will include: i) The inhibition of *Aspergillus flavus* and *Penicillium nordicum* growth, as the production of aflatoxins and ochratoxin A by lactic acid bacteria and their organic acids; ii) The adsorption of mycotoxins by microorganisms isolated from Kefir grains; and iii) The biodegradation of ochratoxin A by *Pediococcus parvulus*.

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