

Mycotoxins in Food and Mitigation of its effects

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Mycotoxins are toxic compounds mainly produced by fungi of the genera *Aspergillus*, *Fusarium* and *Penicillium*. These toxins are frequently detected in many food commodities including cereals, fruit and vegetables, even after processing [1]. Since the same fungus may produce more than one toxin and the same toxin may be produced by different fungi, mycotoxins often occur as a mixture. Their ubiquitous presence represents a challenge to the health of humans, animals and the environment. Hundreds of compounds are listed as possible mycotoxins; however, only a few occur at levels that may be really challenging.

The main focus of AMG is to study and develop integrated and innovative methods, supported in fundamental and applied research, for the mitigation of the occurrence of mycotoxins in food and feed, promoting complex system understanding and knowledge gaps identification.

Currently available approaches to control mycotoxins cannot assure their complete elimination from food and feeds chains. Most of them are based on prevention, either pre or post-harvest, or on the segregation of contaminated kernels after harvest. Other strategies will partially remove mycotoxins from commodities and are applied on a case by case approach. These will include: (i) biological ones, inactivation of patulin by *Saccharomyces* strains or the degradation of ochratoxin A by enzymes; (ii) chemical ones, the use of ozone in food processing; (iii) or physical ones, food irradiation to inactivate mycotoxin producing fungi and degrade mycotoxin. However, these methods have not a broad application. The lack of practical solutions to control mycotoxin contamination in the field, at harvest and of processed products leads to the demand of methods for their partial or total elimination.

Over the last years, AMG studies the application of some of these strategies, including the use of ozone, the application of irradiation, and the use of enzymes and of lactic acid bacteria to inactivate or inhibit mycotoxigenic fungi, and to degrade mycotoxins. The main outcomes of this work will be reviewed.

References

- [1] Abrunhosa L, Morales H, Soares C, Calado T, Vila-Chã AS, Pereira M, Venâncio A. A Review of Mycotoxins in Food and Feed Products in Portugal and Estimation of Probable Daily Intakes. *Critical Reviews in Food Science and Nutrition*, 56(2), 249-265, 2016.