



The effect of food processing on the fate of mycotoxins

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The filamentous fungi are ubiquitous in nature, being their occurrence seen as natural. Associated with favourable ecological conditions (e.g., temperature and relative humidity), these microorganisms may multiply and produce undesirable compounds. Classic examples of this relationship are the production of chlorinated anisoles in cork, polyphenol oxidases in grapes or toxic compounds – mycotoxins – in different commodities.

The discovery of the occurrence of mycotoxins in food commodities has revolutionized the study of mycology, creating a new field: food mycotoxicology. The occurrence of food outbreaks due to the presence of mycotoxins is now well recognized, and even admitted that mycotoxins are closely related to some pests described in the Middle Ages [1].

Several strategies can be employed to reduce mycotoxins levels in food commodities. The most important are preventive since they avoid the contamination in the first place. However, decontamination or detoxification procedures can be used as well to remove or reduce mycotoxin levels. These measures, which are technologically diverse, are usually classified into physical, chemical or biological [2]. Physical methods consist of segregation, sorting, cleaning, peeling and others that aim to remove the most contaminated fractions of the commodities. Chemical methods consist of the utilization of compounds to destroy toxins, as ozone (ozonation). Biological methods use microorganisms which can decompose, transform or adsorb toxins to detoxify contaminated products or to avoid the toxic effects when mycotoxins are ingested. These are the technologies of choice for decontamination proposes because they present several advantages from being mediated by enzymatic reactions.

From a perspective of implementing a food safety model, the carry-over mycotoxins from raw materials to end products, as well as practices to minimize it, will be presented and discussed.

References

- [1] Venâncio A, Paterson R, “The challenge of mycotoxins”, In: *Food Safety - A Practical and Case Study Approach* (McElhatton A. & Marshall RJ eds), Springer, New York, (2007) pp. 24-47.
- [2] Freitas-Silva O, Venâncio A, “Ozone applications to prevent and degrade mycotoxins: a review” *Drug Metabolism Reviews*, (2010) 42: 612-620.