

Gamma irradiation in ochratoxin A control

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ABSTRACT

Ochratoxin A (OTA) is one of the main mycotoxins found in food. Gamma radiation is used for preserving foods since it inactivates pathogens. The effect of irradiation on mycotoxins has been studied but results are contradictory. The different matrices and conditions used by several authors may have influenced reported results. The aim of this work was to study the effects of gamma radiation in OTA in order to evaluate its applicability in foods. OTA was irradiated in its dry form, in aqueous and in methanolic solutions to evaluate the water role in OTA irradiation. Then, OTA contaminated food matrices, such as wheat flour, grape juice and wine, were irradiated. In aqueous solutions, high degradation of OTA ($\geq 90\%$) was obtained with gamma radiation doses as low as 2.5kGy. However, in dried samples, OTA was found extremely resistant to radiation doses of up to 10kGy. In this case, water was a determinant factor for the effectiveness of irradiation process. In the assays with food matrices, radiation doses greater than 10kGy were needed to achieve higher reductions of OTA, being eliminated just 24%. It was also observed that OTA elimination was higher in wheat flour with higher moisture contents but the elimination of OTA in grape juice and wine were not higher than those observed in wheat flour. It is concluded that OTA is very sensitive to irradiation in water solutions but resistant in its dry form and in food matrices. Due to the low elimination percentage observed, it can be considered that gamma radiation is not a suitable technology for the elimination of OTA from foods.

Acknowledgment: Thalita Calado and Luís Abrunhosa received support by grants SFRH/BD/79364/2011 and UMINHO/BPD/51/2015 from FCT, respectively. CEB gratefully acknowledge FCT support through projects UID/BIO/04469/2013, NORTE-01-0145-FEDER-000004, and RECI/BBB-EBI/0179/2012. The C2TN/IST authors gratefully acknowledge their FCT support through projects RECI/AAG-TEC/0400/2012 and UID/Multi/04349/2013.

Keywords: Ochratoxin A, gamma irradiation, grape juice, wheat flour, wine