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Intake of ochratoxin A and deoxynivalenol through beer consumption in Belgium

P. Harcz, E. K. Tangni, O. Wilmart, E. Moons, C. Van Peteghem, S. De Saeger, ...show all

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Abstract

Estimations of ochratoxin A (OTA) and 4-deoxynivalenol (DON) exposure of the Belgian population through beer consumption were made using the results of the recent Belgian food survey and the compiled data set of OTA and DON levels in conventionally and organically produced beers in 2003–05. For the consumers of organic beers, the daily intake of OTA was 0.86 (in 2003), 1.76 (in 2004) and 0.72 (in 2005) ng kg⁻¹ body weight (bw), considering the mean beer consumption (0.638 litres) and the average level of OTA in 2003, 2004 and 2005, respectively. Using the 97.5th percentile of beer consumption (1.972 litres), the corresponding OTA daily intakes were 2.65, 5.44 and 2.24 ng kg⁻¹ bw, which are close or above the tolerable daily intake (TDI) of 5 ng kg⁻¹ bw. For the consumers of conventional beers, the OTA intakes were low: 0.23, 0.23 and 0.11 ng kg⁻¹ bw day⁻¹ for the average beer consumption, in 2003, 2004 and 2005 against 0.72, 0.73 and 0.34 ng kg⁻¹ bw day⁻¹ when the 97.5th percentile level was

considered. As for the DON intake, the estimates were quite low for both conventional and organic beer consumers when the provisional maximum TDI (PMTDI) of $1 \mu\text{g kg}^{-1}$ bw was considered. Average consumption of organic beer led to daily intakes of 0.05 and $0.04 \mu\text{g DON kg}^{-1}$ bw in 2003 and 2004, respectively, whilst for conventional beer, daily intakes were 0.07 and $0.05 \mu\text{g DON kg}^{-1}$ bw. At the 97.5th percentile level of beer consumption, daily intakes of 0.15 and $0.13 \mu\text{g kg}^{-1}$ bw were obtained for organic beers against 0.23 and $0.17 \mu\text{g kg}^{-1}$ bw for conventional ones. The results showed that beer could be an important contributor to OTA exposure in Belgium, even though a declining trend seems to be apparent during the last year of monitoring. Therefore, efforts should be devoted to maintain the OTA levels as low as reasonably achievable, especially for organic beer.

Keywords: [Intake](#), [mycotoxins](#), [ochratoxin A](#), [deoxynivalenol](#), [beer](#), [organic](#), [Belgium](#)

Additional information

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