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Estimative of Dietary Exposure To Zearalenone, Ochratoxin A and Aflatoxin B1 Through the Consume of Pasta Bakery Products

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Resumo

Since the mycotoxins are considered unavoidable in many cases, research focused on the effects of cereal processing and in the estimative of exposure to mycotoxins have an important role. Brazilian legislation established maximum limits limits for zearalenone (ZEA) (200 µg/kg) in wheat flour and bakery products, and zearalenone (5 µg/kg) and ochratoxin (OTA) (10 µg/ kg) in cereals and cereal products. ZEA, OTA and AFB1 have been mainly associated with hyperestrogenism effects, nephrotoxicity and hepatotoxicity, respectively. The objective of this work was simulate the theoretical estimative of the exposure to ZEA, OTA and AFB1 through the consumption of pasta and bakery products considering the hypothesis that these products are produced with flour containing the maximum limit of each mycotoxin permitted by Brazilian legislation. Comparing the foods evaluated in this study, the higher percentage of mycotoxins reduction was observed in cake production (95, 90 and 70% for a ZEA, OTA and AFB1, respectively). Bread and biscuit showed similar reduction in mycotoxins levels (89 and 90%, respectively, for ZEA; 80 and 85% for OTA; 36 and 40% for AFB1). The lower reduction in the levels of mycotoxins has been observed for pasta compared to all bakery products (75, 65 and 10% for for ZEA, OTA and AFB1, respectively). Although, the lower mycotoxins reduction were observed in pasta processing, this product can be the most important source of mycotoxins in the diet. Bread was the second most

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important contributor to mycotoxins exposure in all evaluated groups, followed by consumption of cake and biscuit. The consumption of these products (sum of bread, biscuit, cake and pasta intake) could represent 12.6% of the provisional maximum tolerable daily intake (PMTDI) of ZEA and 30.5% of the provisional tolerable weekly intake (PTWI) of OTA. In this situation, the consumption of bakery products and pasta would not represent risk for consumer health. The risk characterization related to the exposure to AFB1 was done through determination of margin of exposure (MOE). The estimated MOE value was 2.71, which may represent risk.

Palavras-Chave: mycotoxins, risk assessment, processing

Agência de Fomento: FAPERGS; CAPES