

The global occurrence of mycotoxins in Southern Africa countries

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Resumo

Mycotoxins are toxic secondary metabolites produced by certain fungi that can contaminate food and feed, posing risks to human and animal health. The prevalence of mycotoxins is very well studied in some regions of the world, but not as well in Portuguese speaking African countries. At an initial stage, the scientific literature was reviewed, according to the PRISMA criteria for systematic revision works, to extract all the information available for food commodities in Angola and Mozambique. Being realized that a low number of publications were available for these countries, the search was extended for the Southern African Region (Southern African Development Community). This research was conducted to provide a comprehensive analysis of the literature on mycotoxin occurrence in these countries.

In the systematic review, close to 1500 scientific papers were identified and screened for mycotoxin occurrence data. A total of 107 scientific articles were selected for further analysis and underwent a rigorous validation process, during which only 79 were deemed suitable for inclusion in the study, where the food, the mycotoxin, the number of tested samples and the number of positive samples were clearly presented. Additionally, the mean concentration of total samples, the mean concentration of the positive samples, and

the range of concentration in the positive samples were extracted when available. None of the selected papers included occurrence data for Angolan samples, while three included data from Mozambique, reinforcing the need to collect more information from these countries.

From the selected papers, data from 10 countries were extracted, mainly from South Africa (50 papers), Tanzania (20) and Malawi (10). One hundred and ten thousand and forty data for different pairs mycotoxin-food were extracted, most of which for the occurrence of aflatoxins (AFB1, AFB2, AFG1, AFG2, AFM1) – 30318 pairs of data, followed by fumonisins (FB1, FB2, FB3, HFB1) with 22843, and deoxynivalenol and derivatives (DON, 15-ADON, 3-ADON, DON-3G) with 11306. Most of the data collected refers to samples from South Africa (59340) and Tanzania (31274). The overall detection rate of mycotoxins was 23.83 % (26218 in 110040).

For aflatoxins, 7070 positive samples were determined (23.32 % of total samples). From these, 1994 positive samples refer to Tanzania (23.51 %), 1673 positive samples refer to Malawi (71.55 %), and 1609 positive samples refer to South Africa (12.27 %). Regarding fumonisins, 10214 positive samples were determined (44.71 % of total samples). From these, 1668 positive samples refer to Tanzania (26.33 %), 1644 positive samples refer to Zimbabwe (79.84 %), and 5396 positive samples refer to South Africa (45.15 %). Regarding deoxynivalenol, 2309 positive samples were determined (20.28 % of total samples), being most of them from South Africa – 2144 positive samples (21.26 %). These results shed light on the dramatic situation in some countries regarding the prevalence of these highly toxicogenic compounds.

The research endeavor was essential for enhancing our understanding of mycotoxin-related challenges in the region and informing evidence-based strategies for ensuring food and feed safety, public health, and agricultural sustainability. A deeper analysis of the collected data will be presented during the event.

Palavras-Chave: Mycotoxins, emergent mycotoxins, SADC, PRISMA, PALOP

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