PRACTICE ABSTRACT N. 7

Mycotoxin contamination of cereals and fermented foods across African regions in the last 10 years (2014-2024)

Background. Mycotoxins are toxic compounds produced mainly by Aspergillus, Fusarium and Penicillium fungi, contaminating food and threatening food safety and security. The most harmful mycotoxins include aflatoxins (AFs), fumonisins (FBs), deoxynivalenol (DON), ochratoxin A (OTA) and zearalenone (ZEN). High temperature, humidity, crop damage and poor storage favour contamination. In Africa, AFs and FBs are widespread in staple crops like maize, sorghum, and millet, often exceeding the established safety limits. Many African countries still lack effective monitoring and control systems, complicating safe food production.

Objective. This study reviews mycotoxin contamination in staple cereals and fermented foods across Kenya, Benin, Côte d'Ivoire, Nigeria and South Africa. Data from 2014–2024 (2011 for Benin) were classified by country, sample category (primary, processed, fermented food), analytical method and mycotoxin type.

Results. Sixty-five papers were collected. The sum of total samples analysed varied from 300 (Benin) to 8,500 (Kenya). LC-MS/MS was mainly used in Nigeria and South Africa, while ELISA and other rapid tests prevailed in Kenya and Benin. AFs and FBs were the most detected mycotoxins, with highest levels in Nigeria and Kenya. Other mycotoxins such as OTA, DON, and ZEN were more frequent in Côte d'Ivoire and Nigeria.

Recommendation. Widespread mycotoxin contamination in Africa poses serious risks to food safety, public health, and rural economies, making it difficult to source high-quality raw materials and produce safe food. African countries need to develop and implement effective mycotoxin monitoring and management strategies integrated into food value chain policies. The UP-RISE project data, combined with weather and agronomic information, will help identify gaps in current management practices and support stronger food safety governance across the continent.

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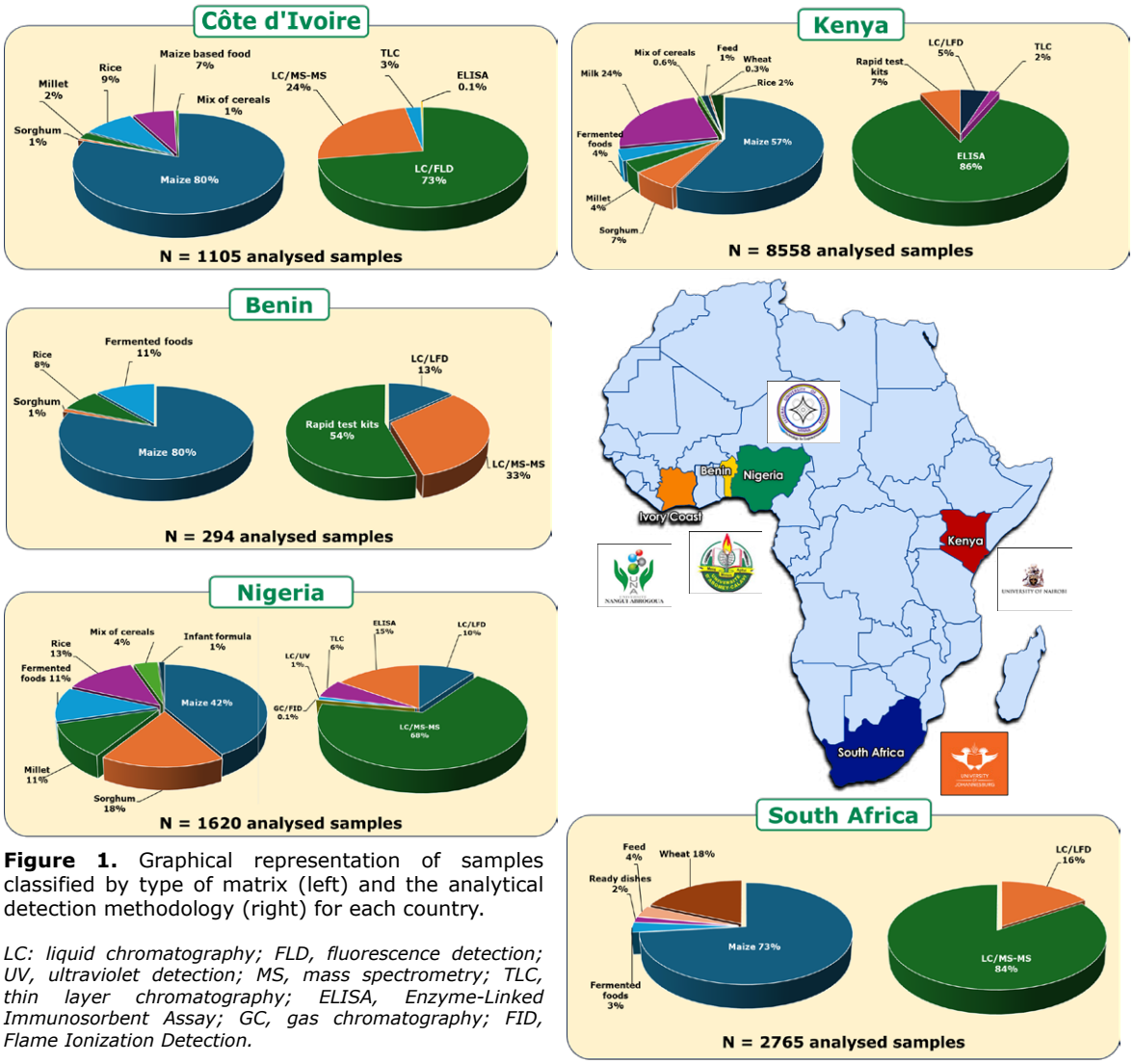

Figure 1. Graphical representation of samples classified by type of matrix (left) and the analytical detection methodology (right) for each country.

LC: liquid chromatography; FLD, fluorescence detection; UV, ultraviolet detection; MS, mass spectrometry; TLC, thin layer chromatography; ELISA, Enzyme-Linked Immunosorbent Assay; GC, gas chromatography; FID, Flame Ionization Detection.

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