

Contamination by aflatoxins in different food matrices produced and consumed in Mozambique

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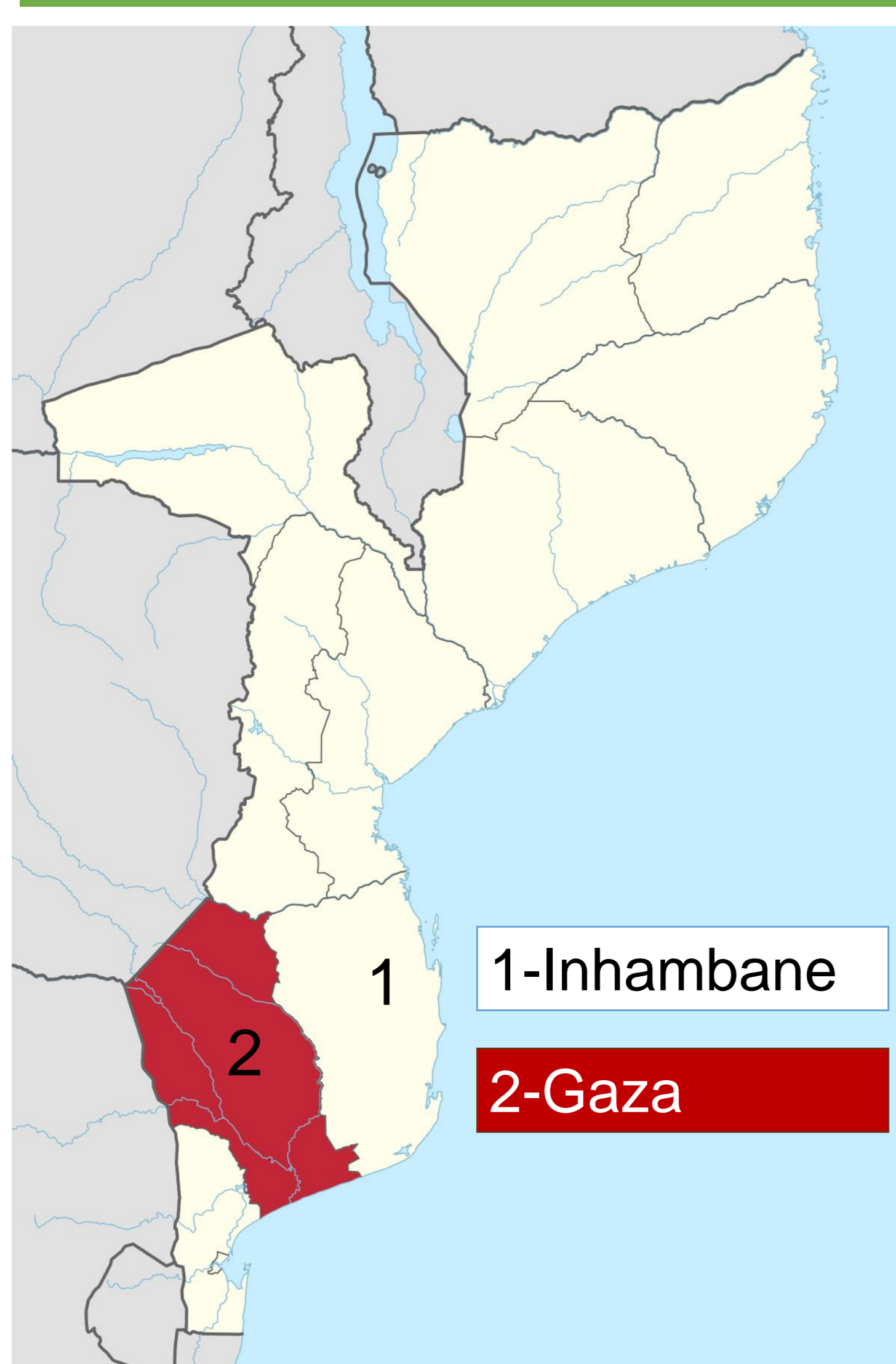
INTRODUCTION

Mycotoxins are significant contributors to food losses in developing countries. In Mozambique, there is no knowledge of the risk of mycotoxins in the country, nor structured actions to reduce the impacts of mycotoxins and promote health and food security in disadvantaged populations. Major crops like maize, peanuts and rice are of great importance to the population's diet, thus the knowledge of their aflatoxin contamination level is pressing.

OBJECTIVES

This research aimed to analyze the level of contamination by aflatoxins in different food matrices produced and consumed in southern Mozambique.

MATERIAL AND METHODS



Ten samples were collected from each matrix (maize, rice, and peanut) in each of the 3 districts (Chongoene, Manjacaze and Chókwe) of Gaza province (except peanut in Chokwe), and 10 peanut samples in each of the 3 districts (Massinga, Inhambane and Inharrime) of Inhambane province, in a total of 110 samples.

Figure 1: Provinces of study, Mozambique

Samples were collected between January and June 2023 from local markets and producers. Samples were analyzed for total aflatoxins using the lateral flow strip method, AgraStrip® Pro WATEX® (Romer).

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RESULTS

Results showed that, from all matrices, the highest levels of aflatoxins were found in maize, with averages ranging from 369.2 (in Manjacaze) to 1972.6 µg/kg (in Chokwe). Average aflatoxin levels in rice ranged between 1.2 (Chongoene) and 63.08 µg/kg (Manjacaze). Peanuts from the province of Inhambane were more contaminated than those from Gaza, with averages ranging from 5.6 (Manjacaze, Gaza) to 95.2 µg/kg (Inhambane) (table 1).

Table 1: Levels of total aflatoxin contamination in maize, rice, and peanut grain of selected crops in Mozambique

Crop	Province	District	Number samples	Positive samples	Min-Max (µg/kg)	Average (µg/kg)
Maize	Gaza	Chokwe	10	10	1.3-9200	1972.6
		Chongoene	10	10	2.4-8736	981.1
		Manjacaze	10	10	4.8-1950	369.2
Rice	Gaza	Chokwe	10	8	LOQ-25.2	4.9
		Chongoene	10	2	LOQ-6	1.2
		Manjacaze	10	9	LOQ-380	63.1
Peanut	Gaza	Chongoene	10	5	LOQ-43.6	5.6
		Manjacaze	10	2	LOQ-41.3	5.6
	Inhambane	Inhambane	10	4	LOQ-467	95.2
		Inharrime	10	2	LOQ-29.1	4.2
		Massinga	10	4	LOQ-496	91.4

CONCLUSIONS

Considering that the maximum admissible levels for total aflatoxins recommended by the Codex Alimentarius Commission for cereals and pulses is 15 µg/kg, the level of aflatoxin contamination in food produced and consumed in southern Mozambique is high and constitutes a public health risk for the population. Therefore, risk mitigation strategies are urgently needed.