

Title Prevalence and factors associated with aflatoxin contamination of peanuts from Western Kenya
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Abstract

Aflatoxin contamination of peanuts poses a risk to human health and has been identified as a major constraint to trade in eastern Africa. A survey was carried out to obtain baseline data on levels of aflatoxin in peanuts from major production regions in western Kenya. A total of 384 and 385 samples from Busia and Homabay districts, respectively, were obtained and analyzed for aflatoxin content with an indirect competitive ELISA protocol. Levels of aflatoxin ranged from 0 to 2688 and 7525 $\mu\text{g}/\text{kg}$ in samples from Busia and Homa Bay, respectively. Of 769 samples, 87.01% contained $< 4 \mu\text{g}/\text{kg}$ of aflatoxin, 5.45% were in the range ≥ 4 and $20 \mu\text{g}/\text{kg}$, while 7.54% exceeded the Kenya's regulatory limit of $20 \mu\text{g}/\text{kg}$. There was a highly significant ($\chi^2 = 14.17$; $P < 0.0002$) association between district of origin and sample aflatoxin levels. This observation was supported by a significant ($\chi^2 = 11.98$; $P = 0.0005$) association between levels of aflatoxin and agro ecological zones. Only 3.26% of the samples from the dryer LM3 zone had $> 20 \mu\text{g}/\text{kg}$ compared with 10.28% of the samples from the wetter and humid LM1 zone. There was also a highly significant ($\chi^2 = 9.73$; $P = 0.0018$) association between cultivar improvement status and aflatoxin levels. Logistic regression analysis revealed that the odds for peanuts from Busia being contaminated were 2.6 times greater than those for peanuts from Homabay. Planting improved cultivars would lower the odds of contamination to a half (odds ratio = 0.552) those for local landraces. These results are discussed in relation to the risk of human exposure to aflatoxins and the need for proper sampling procedures for regulatory purposes.