

ABSTRACT

Aflatoxicosis has repeatedly affected Kenyans, particularly in the eastern region, due to consumption of contaminated maize. However, save for the cases of acute toxicity, the levels of sub-lethal exposure have not been adequately assessed. It is believed that this type of exposure does exist even during the seasons when acute toxicity does not occur. This study, therefore, was designed to assess the exposure of households to aflatoxins through consumption of maize and maize products. Twenty samples each of maize kernels, *muthokoi* and maize meal were randomly sampled from households in Kibwezi District of Makueni County in Eastern Kenya and analysed for aflatoxin contamination. The samples were quantitatively analysed for aflatoxin contamination using HPLC. The uncertainty and variability in dietary exposure was quantitatively modelled in Ms Excel using Monte Carlo simulation in @Risk software. Aflatoxins were found in 45% of maize kernels at between 18 and 480 $\mu\text{g kg}^{-1}$, 20% of *muthokoi* at between 12 and 123 $\mu\text{g kg}^{-1}$, and 35% of maize meal at between 6 and 30 $\mu\text{g kg}^{-1}$. The mean dietary exposure to aflatoxin in maize kernels was $292 \pm 1567 \text{ ng kg}^{-1} \text{ body weight day}^{-1}$, while the mean dietary exposure to aflatoxin in maize meal and *muthokoi* were 59 ± 62 and $27 \pm 154 \text{ ng kg}^{-1} \text{ body weight day}^{-1}$ respectively. The results showed that the amount and frequency of consumption of the three foods is the more important contributing factor than the mean aflatoxin concentration levels, to the risk of dietary exposure to aflatoxins.