

ABSTRACT

Aflatoxins are fungal metabolites that contaminate foods and feeds, causing adverse health effects in humans and animals. This study determined the occurrence of aflatoxins in fish feeds and their potential effects on fish. Eighty-one fish feeds were sampled from 70 farms and 8 feed manufacturing plants in Nyeri, Kenya for aflatoxin analysis using competitive enzyme-linked immunosorbent assay. Fish were sampled from 12 farms for gross and microscopic pathological examination. Eighty-four percent of feeds sampled tested positive for aflatoxins, ranging from 1.8 to 39.7 $\mu\text{g}/\text{kg}$ with a mean of $7.0 \pm 8.3 \mu\text{g}/\text{kg}$ and the median of 3.6 $\mu\text{g}/\text{kg}$. Fifteen feeds (18.5%) had aflatoxins above the maximum allowable level in Kenya of 10 $\mu\text{g}/\text{kg}$. Homemade and tilapia feeds had significantly higher aflatoxin levels than commercial and trout feeds. Feeds containing maize bran and fish meal had significantly higher aflatoxin levels than those without these ingredients. Five trout farms (41.7%) had fish with swollen abdomens, and enlarged livers with white or yellow nodules, which microscopically had large dark basophilic hepatic cells with hyperchromatic nuclei in irregular cords. In conclusion, aflatoxin contamination of fish feeds is prevalent in Nyeri, and may be the cause of adverse health effects in fish in this region.

Keywords:

aflatoxins; fish feed; Nyeri; Kenya; mycotoxins; ELISA