

Occupational aflatoxin exposure among feed mill workers in Nigeria

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Abstract

There are indications that significant levels of mycotoxins may be absorbed from inhaled fungal spores. The problem is likely to be most serious with aflatoxins. Indoor airborne fungi in three feed mills in south-western Nigeria were assayed using Sabouraud dextrose agar and coconut agar medium. Fungi isolated include *Aspergillus flavus*, *Rhizopus* spp., *Aspergillus fumigatus*, *Aspergillus candidus*, *Aspergillus niger* and *Aspergillus terreus* with incidence rates of 61, 15, 12, 5, 5 and 2%, respectively. Amount and type of aflatoxins produced in Sabouraud dextrose broth by aflatoxigenic strains of *A. flavus* isolated at the three mills were strain dependent. Exposure of feed mill workers to aflatoxins was assessed by HPLC analysis of blood samples. Subjects from different occupational groups served as a control group. The mean concentrations of aflatoxin B1, B2, G1 and G2 in blood samples of the feed mill workers varied from 73.4-189.2, <0.1-0.5, 0.3-1.9 and <0.1-3.4 ng/ml, respectively. There was a significant difference between the mills regarding blood aflatoxin levels of the workers; poorly ventilated mills resulted in higher blood aflatoxin B1 levels. Aflatoxin B1 was not detected in the blood samples of the control group; mean concentrations of aflatoxin B2, G1 and G2 detected in this group varied from <0.1-0.3, 0.4-1.5 and <0.1-0.3 ng/ml, respectively. Results from the present study showed that ventilation of feed mills is an important issue that should be considered to lower the risk of aflatoxin exposure among feed mill workers.

Keywords

aflatoxins, airborne fungi, feed mill, mycotoxin exposure, *Aspergillus flavus*

