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Opinion

Opinion: Mycotoxins in Food and Community Health - A Plea for Adequate Testing

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In a position paper, the World Health Organization warned of continued contamination of food and animal feed by mycotoxins [1]. As you will recall, mycotoxins are naturally occurring defensive secretions of fungi and these fungi tend to grow on grains, spices, dried fruit and nuts. Furthermore, the International Agency for Research on Cancer, a branch of the World Health Organization, has warned that there are proven links between ingestion of mycotoxins and cancer proliferation [2]. Among these correlations are aflatoxins and the development of liver cancer. Also cited were the associations between fumonisin toxin and the development of esophageal cancer as well as neural tube defects [3]. Other notable mycotoxins include ochratoxin A which has been associated with renal diseases. To understand the extent of the problem, a review published on the website of ecancer.org said, "An estimated 500 million of the poorest people in sub-Saharan Africa, Latin America, and Asia are exposed to the pervasive natural toxins, aflatoxins and fumonisins, on a daily basis by eating their staple diet of groundnuts, maize, and other cereals. Exposure occurs throughout life at levels far in excess of internationally accepted norms" [4]. These norms can be very low. For example, "These tolerable daily intakes are used by governments and international risk managers, such as the Codex Alimentarius Commission, to establish maximum levels for mycotoxins in food. The maximum levels for mycotoxins in food are very low due to their severe toxicity. For example, the maximum levels for aflatoxins set by the Codex in various nuts, grains, dried figs and milk are in the range of 0.5 to 15 μg/kg".

To date, prevention of mycotoxin contamination of food has been associated with timely harvesting of crops to eliminate fungal exposure, proper grain drying and storage methods, blockchain and traceability methods, and development of new testing methods. Also, the adoption of Hazard Analysis and Critical Control Points (HACCP) technologies in food processing may identify mycotoxin contaminants in food and feed along with better rapid testing methods. Recently, the Food and Drug Administration of the United States government has published a compendium of analytical methods that can be used in mycotoxin detection [5]. The World Health Organization advises to buy foodstuffs as fresh as possible and to avoid food that has been in storage for extended periods in order to avoid possible contamination by mycotoxins.

In the opinion of this editor, in order to ensure the health and safety of their population, all governments around the world should adopt strict oversight of food testing programs for mycotoxins and institute HAACP programs in all food production facilities. Crops grown in warm and humid environments should be especially monitored closely. It is known that liver cancers are associated with not only mycotoxin contaminants but also hepatitis B and C infections. Countries with high incidence of liver cancers include Cambodia, Laos, Thailand, Vietnam, Gambia, Chad and other countries in sub-Saharan Africa. Diseases that can be prevented, such as cancers from mycotoxin contamination, should be the priority of every government and food regulation institute.

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