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Aflatoxin

Aflatoxin is a fungal toxin that commonly contaminates maize and other types of crops during production, harvest, storage or processing. Exposure to aflatoxin is known to cause both chronic and acute hepatocellular injury. In Kenya, acute aflatoxin poisoning results in liver failure and death in up to 40% of cases.

In developed countries, commercial crops are routinely screened for aflatoxin using detection techniques that are performed in a laboratory setting. Food supplies that test over the regulatory limit are considered unsafe for human consumption and destroyed.

In developing nations, many people are exposed to aflatoxin through food grown at home. Inadequate harvesting and storage techniques allow for the growth of aflatoxin-producing fungus and homegrown crops are not routinely tested for the presence of aflatoxin. As a result, an estimated 4.5 billion people living in developing countries may be chronically exposed to aflatoxin through their diet.

In May, 2006, an outbreak of acute aflatoxicosis was reported in a region of Kenya where aflatoxin contamination of homegrown maize has been a recurrent problem. CDC teams worked with the Kenyan Ministry of Health to trial a rapid, portable aflatoxin screening tool that could be used in the field to identify contaminated maize and guide urgent maize replacement efforts during an outbreak. To do this, we used a portable lateral flow immunoassay; a test validated for use at commercial silo laboratories, and modified the methods for use in rural Kenya without electricity or refrigeration.

We randomly surveyed 165 households in Southeastern Kenya and tested a small portion of their maize supplies for the presence of aflatoxin using our modified rapid screening test. At each village, a mobile laboratory station was set up to grind and test the maize samples. CDC teams worked closely with local residents, and government officials to perform the testing and relay results to local health officers in order to facilitate immediate maize replacement and other interventions.

Field methods used during the outbreak were compared to Vicam immunoaffinity methods currently used at the Kenya National Public Health Lab. Field screening methods showed a sensitivity and specificity of 98 and 91% respectively. This investigation demonstrates that rapid lateral flow immunoassays may be modified to provide a simple, on-site screening tool that gives immediate results and facilitates timely interventions.

[Outbreak of Aflatoxin Poisoning --- Eastern and Central Provinces, Kenya, January--July 2004 \(/mmwr/preview/mmwrhtml/mm5334a4.htm\)](#). MMWR. September 3, 2004 / 53(34):790-793.

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