**Mycotoxins**

Naturally occurring toxins such as mycotoxins pose profound challenges to food safety. The mycotoxins of public health importance within the region are aflatoxins. There is compelling evidence of the association between exposure to aflatoxins and primary liver cancer.

**What are mycotoxins?**

Mycotoxins are substances produced by moulds that contaminate various agricultural commodities either before harvest or under post-harvest conditions. Generally, tropical conditions such as high temperatures and moisture, monsoons, unseasonal rains during harvest, and flash floods lead to fungal proliferation and production of mycotoxins. Poor harvesting practices, improper storage, and less than optimal conditions during transport and marketing can also contribute to fungal growth and increase the risk of mycotoxin production.

**Extent of the problem**

The FAO has estimated that up to 25% of the world’s food crops are significantly contaminated with mycotoxins. The foodborne mycotoxins likely to be of greatest significance for human health in tropical developing countries are the fumonisins and aflatoxins.

The chronic incidence of aflatoxin in diets is evident from the presence of aflatoxin M1 in human breast milk in Ghana, Nigeria, Sierra Leone, Sudan, Thailand, and the United Arab Emirates, and in umbilical cord blood samples in Ghana, Kenya, Nigeria and Sierra Leone.

**Health implications**

Exposure to mycotoxins can produce both acute and chronic

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3. Basic Food Safety for Health Workers. WHO. 1999
toxicities ranging from death to deleterious effects on the central nervous, cardiovascular and pulmonary systems, and the alimentary tract.\textsuperscript{5}

Mycotoxins may also be carcinogenic, mutagenic, teratogenic and immunosuppressive.\textsuperscript{5}

Together with the hepatitis B virus, aflatoxins are seen as cofactors in the high incidence of primary liver cancer in tropical Africa.\textsuperscript{6}

Recent studies carried out in West African countries, such as Benin, The Gambia, and Togo indicate chronic exposure of population groups and fetuses to dietary aflatoxins. Children exposed to aflatoxin may become stunted, underweight, and more susceptible to infectious diseases in childhood and later life.\textsuperscript{5}

**Economic costs**

Economic losses arising from the export of mycotoxin-contaminated food and feed are considerable. In domestic markets economic losses occur at various levels, from producers to brokers, processors and animal producers.\textsuperscript{6}

**Prevention of Mycotoxins**

Following good agricultural practices during both pre-harvest and post-harvest conditions would minimize the problem of contamination by mycotoxins such as aflatoxins, ochratoxin and trichothecene mycotoxins. These include appropriate drying techniques, maintaining proper storage facilities and taking care not to expose grains or oil seeds to moisture during transport and marketing.\textsuperscript{1}

The method of segregating contaminated, mouldy, shrivelled or insect-infested seeds from sound kernels has been particularly useful in minimizing aflatoxin contamination in peanuts.\textsuperscript{1}

Detoxification of aflatoxins in foods and animal feeds has been attempted in the past. Any detoxification procedure must be tested for safety and efficacy and invariably results in increased handling and costs. In addition, the detoxified product has been considered suitable only for animal feed purposes and not for human consumption.\textsuperscript{1}

**Challenges**

Mycotoxins occur, and exert their toxic effects, in extremely small quantities in foodstuffs. Their identification and quantitative assessment thus generally require sophisticated sampling, sample preparation, extraction, and analytical techniques.\textsuperscript{4}

There remains a need for efficient, cost effective sampling and analytical methods that can be used in developing country laboratories.\textsuperscript{4}

**Action underway**

Recognizing the public health and economic implications of aflatoxins, the Regional office organized a scientific consultation to review current scientific knowledge on the impact of consumption of foods contaminated with Aflatoxins on human health, with particular reference to Africa.

The Regional Office will continue to focus on strengthening foodborne disease monitoring and surveillance in countries.

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\textsuperscript{1} Manual on the Application of the HACCP system in Mycotoxin Prevention and Control. FAO. 2001

\textsuperscript{5} Agriculture food and nutrition for Africa – A resource book for teachers of agriculture. FAO. 1997

For More Information on Food Safety and Nutrition please contact Division of Prevention and Control of Non-communicable Diseases (DNC). B.P. 6 Congo, Brazzaville.