HEALTH BASICS

Aflatoxin

Aflatoxins are harmful substances made by certain molds that can contaminate food and animal feed.

WHAT IT IS
Toxins made by certain molds growing on food and animal feed

WHERE IT COMES UP
Food alerts, contaminated crops, and specialized exposure testing

WHY IT MATTERS
High or repeated exposure can damage the liver and DNA

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
A clinician, poison centre, or food-safety authority

HOW IT IS CHECKED
Laboratory food testing; specialized blood or urine exposure tests

Overview

Aflatoxin is the name for a group of toxins made by certain molds. The main molds involved are Aspergillus flavus and Aspergillus parasiticus . They can grow on crops before harvest or during warm, damp storage.

Aflatoxin is not a disease or a diagnosis. It is a food-safety hazard. Most human exposure comes from eating contaminated food. Less often, people may be exposed through dust while handling heavily contaminated crops or animal feed.

Foods that can be affected include maize, also called corn, peanuts, tree nuts, cottonseed, dried fruit, and some spices. Which foods are most important differs by region, climate, farming practices, and storage conditions.

Aflatoxin B1 is the form of greatest health concern. When dairy animals eat feed containing aflatoxin B1, their bodies can change some of it into aflatoxin M1. This form can enter milk.

Government agencies and food producers test selected foods and feeds for aflatoxins. Legal limits and monitoring programs differ between countries and by food type.

How it works

Mold growth and aflatoxin production are related, but they are not the same thing. A food can contain mold without having aflatoxin. Aflatoxin may also remain after the mold is no longer obvious. You cannot reliably detect it by looking, smelling, or tasting.

Heat from ordinary cooking does not reliably remove all aflatoxin. Pasteurizing milk also does not guarantee removal of aflatoxin M1. This is why testing and control during growing, storage, processing, and distribution are important.

After aflatoxin enters the body, the liver processes it. Some is broken down and removed. Some can be changed into a highly reactive chemical that attaches to proteins and DNA, the genetic material inside cells.

DNA damage can lead to lasting cell changes. Repeated exposure over time raises concern because these changes may contribute to liver cancer. The risk is affected by how much aflatoxin enters the body, how long exposure continues, and whether the liver is already affected by another condition.

Food laboratories can measure aflatoxin directly. Human exposure can sometimes be studied through aflatoxin-related substances in blood or urine. These tests are mainly used in research, occupational health, or public-health investigations. They are not routine screening tests and cannot usually identify one particular food as the source.

Why it matters for your health

The liver is the main organ affected by aflatoxin. A very large exposure over a short period can cause acute aflatoxicosis, which means sudden poisoning from aflatoxin. Documented outbreaks have usually involved heavily contaminated staple foods eaten by a community, rather than a single normal serving of commercially regulated food.

Long-term exposure is linked to hepatocellular carcinoma, the most common type of primary liver cancer. "Primary" means that the cancer begins in the liver rather than spreading there from somewhere else.

Naturally occurring mixtures of aflatoxins are classified as carcinogenic to humans by the International Agency for Research on Cancer. A carcinogen is something that can cause cancer. This classification describes a hazard; it does not mean that every exposure will cause cancer.

The liver-cancer risk is especially important for people with chronic hepatitis B infection. Hepatitis B is a virus that can cause long-lasting liver inflammation. Aflatoxin exposure and chronic hepatitis B can act together to increase risk more than either factor alone.

Research has also examined possible links between long-term exposure, impaired childhood growth, and changes in immune function. These effects are harder to measure, and other health, nutrition, and environmental factors may contribute.

What can go wrong

Acute aflatoxicosis can happen after a very high exposure. It causes sudden liver injury. Possible features include vomiting, abdominal pain, jaundice, unusual bleeding, and worsening weakness. Jaundice means yellowing of the skin or the whites of the eyes.

Liver failure is a rare but serious result of severe acute poisoning. Confusion, marked sleepiness, collapse, or uncontrolled bleeding can indicate severe liver dysfunction and need emergency care.

Chronic liver damage and liver cancer are concerns with repeated exposure over a long period, particularly where contaminated staple foods are common and food monitoring is limited.

Contaminated animal feed can affect livestock and may lead to aflatoxin M1 in milk. Feed contamination can also cause illness and reduced productivity in animals.

Finding mold on one food item does not show that you have been poisoned. Symptoms such as nausea or abdominal discomfort also have many possible causes. A clinician would need to consider the full situation rather than using symptoms alone.

What you can do

For an ordinary food concern without illness, there is usually no personal medical test or routine follow-up needed. Practical steps include:

Removing a moldy section, washing the food, or cooking it does not prove that the remaining food is free of aflatoxin. Do not taste a suspect product to decide whether it is safe.

If you know that you ate a recalled product, follow the recall notice. A clinician or poison centre can help assess a substantial exposure, especially if several people ate the same food or if the food came from a suspected contaminated batch. Depending on the circumstances, a clinician may arrange liver blood tests. Specialized aflatoxin testing is rarely needed for an individual.

Seek prompt medical advice if you develop persistent vomiting, abdominal pain, dark urine, pale stools, or yellow skin or eyes after a credible exposure.

Seek emergency care for confusion, severe drowsiness, collapse, difficulty waking, vomiting blood, or uncontrolled bleeding. These signs are not specific to aflatoxin, but they can signal

severe liver illness or another emergency.

Home "toxin" tests, cleanses, and supplements cannot confirm or remove aflatoxin exposure. There is no routine home detoxification method.

- Check whether the product is included in a food-safety alert or recall
- Keep the packaging, lot number, receipt, and a photograph if reporting it
- Contact the retailer, manufacturer, or local food-safety authority
- Do not eat food that is visibly moldy, unusually discoloured, or badly damaged
- Store grains, nuts, and spices in a dry place and follow storage instructions

Common questions

Can I tell whether food contains aflatoxin?

Not reliably. Heavy mold growth or damage may raise concern, but contaminated food can look normal. Confirmation requires laboratory testing.

Does cooking destroy it?

Ordinary cooking may reduce some aflatoxin but does not reliably eliminate it. Roasting, boiling, or baking should not be used to make a recalled or suspect food safe.

Does one exposure cause liver cancer?

A single exposure does not mean that cancer will develop. Cancer risk is mainly linked to the amount and duration of exposure, along with factors such as chronic hepatitis B infection.

Should I ask for a blood or urine test?

Usually not after an ordinary food concern. Specialized tests can show recent or longer-term exposure in some settings, but they are not standard clinical screening tests. Ask a clinician or public-health service if the exposure was confirmed, substantial, repeated, or part of an outbreak.

Is aflatoxin the same as mold allergy?

No. Mold allergy is an immune reaction to mold particles. Aflatoxin is a chemical toxin made by certain molds. The two involve different health processes.

Can aflatoxin pass into breast milk?

Aflatoxin-related substances can be measured in breast milk after dietary exposure. If you are concerned about a confirmed local contamination event, seek advice from a clinician or public-health service rather than stopping breastfeeding without guidance.

Sources

- World Health Organization. "Mycotoxins." Food safety fact sheet, 2023.
- US Food and Drug Administration. Bad Bug Book: Foodborne Pathogenic Microorganisms and Natural Toxins Handbook , second edition. Aflatoxins chapter, 2012.
- International Agency for Research on Cancer. "Aflatoxins." IARC Monographs on the Evaluation of Carcinogenic Risks to Humans , Volume 100F, 2012.
- EFSA Panel on Contaminants in the Food Chain. "Risk assessment of aflatoxins in food." EFSA Journal . 2020;18(3):6040.
- National Cancer Institute. "Aflatoxins." Cancer Causes and Prevention.
- Centers for Disease Control and Prevention. "Outbreak of aflatoxin poisoning-Eastern and Central Provinces, Kenya, January-July 2004." Morbidity and Mortality Weekly Report . 2004;53(34):790-793.