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# Everything You Should Know About Aflatoxin Mycotoxins

## What is Aflatoxin

Aflatoxin is a type of mycotoxin produced by *Aspergillus* molds. Aflatoxin is probably the most well known mycotoxin, besides trichothecene, and the most researched. This is because aflatoxins are very toxic and highly carcinogenic.

You can also find information about mycotoxins in general at the Mycotoxins page and information about trichothecene mycotoxins at Trichothecene.

## Aflatoxin Symptoms

How badly a person is affected by aflatoxin mycotoxins depends on things like the person's age, gender, level of exposure, duration of exposure, health, strength of their immune system, diet and environmental factors.

There are two main ways people are usually exposed to aflatoxins. The first is when someone takes in a high amount of aflatoxins in a very short time. This can cause:

- Liver damage
- Liver cancer
- Mental impairment
- Abdominal Pain
- Vomiting
- Convulsions
- Edema
- Pulmonary Edema
- Haemorrhaging
- Disruption of food digestion, absorption or metabolism
- Coma
- Death

taking in small amounts of aflatoxins at a time, but over a long period. This might happen if a person's diet has a small amount of aflatoxins, for example. When this happens it can cause:

- Growth and development impairment
- Liver cancer due to DNA mutation caused by aflatoxins

## Aflatoxin Toxicity

Aflatoxin mycotoxins are toxic to humans and even more toxic to animals. They also cause cancer in humans and animals.

It is believed that eating vegetables like carrots and celery reduces the carcinogenic effects of aflatoxins.

The aflatoxin LD50 rate (the dosage level that causes 50% of a group to die) for animals is between 0.5 and 10 mg/kg of the animal's weight.

## Aflatoxicosis - Aflatoxin Poisoning

The technical term for poisoning by aflatoxin mycotoxins is aflatoxicosis. This usually occurs from eating food contaminated with aflatoxin mycotoxins.

Aflatoxicosis is not contagious and drugs and antibiotics do little to help. Aflatoxicosis damages the liver more than any other organ. Aflatoxin mycotoxins also suppress the immune system.

## Aflatoxin Types

There are three main types of aflatoxin mycotoxins:

- Aflatoxins B: This group includes aflatoxin B1 and B2. Aflatoxin B1 is the most common aflatoxin, as well as the most toxic and carcinogenic.
- Aflatoxins G: This group includes aflatoxin G1 and aflatoxin G2

- Aflatoxins M: This group includes aflatoxins M1 and M2. These aflatoxins are metabolic products which are found in the urine and milk produced by animals which have been given feed with aflatoxins in it.

## Aspergillus and Aflatoxin Production

Aflatoxin mycotoxins are produced by the Aspergillus species of molds. Aspergillus molds grow mostly on crops, such as grains and nuts. Under the right conditions, Aspergillus often grows on grain before it is harvested. But it can also grow on harvested grain if the grain is stored damp.

Aspergillus also grows on substances like soil, hay and decaying vegetation. The best conditions for Aspergillus to grow on organic materials is when the temperature is warm and when the material has a high level of moisture (7% or more).

The page on Aspergillus has detailed information about Aspergillus molds.

## Aflatoxin in Food

The American Food and Agriculture Organization estimate that 25% of the food crops in the world are affected by mycotoxins. Of these mycotoxins, aflatoxins are the biggest problem.

Corn, cottonseed and peanuts are the crops most at risk of being contaminated by aflatoxins. Aspergillus also commonly grows on beans, rice, tree nuts and wheat. It grows less often on other grains and nuts.

If animals are given feed contaminated with aflatoxins then aflatoxin mycotoxins can end up in milk, eggs and meat. Aflatoxin M1 and M, which are often found in cow's milk, are metabolites produced by animals which have eaten aflatoxins.

## Aflatoxin Levels in Food

Aflatoxins are found all over the world. However they are much more of a problem in undeveloped or developing nations than they are in developed countries.

Developed countries prohibit high levels of aflatoxin mycotoxins in foods. For example, the United States limits the level of aflatoxins to under 20 parts per billion in food and specifies that the aflatoxins M must be below 0.5 parts per billion in milk. I'm not sure what the limits are here in Australia

Chemical processes are used to remove aflatoxins in foods such as nuts, corn, grains and milk. Most foods do still contain very small amounts of aflatoxins though. Although the aflatoxin levels are usually far below the safety limits, this has raised concern about the effects on humans of the long term intake of small amounts of aflatoxins.

## Aflatoxin in Pet Food

Pets have died from eating pet foods contaminated with aflatoxin mycotoxins. Between late 2005 and early 2006, 23 or more dogs died from eating Diamond Pet Foods dog food contaminated with aflatoxins.

To find out more and get your home inspected call your local independent property inspector on **1800 17 88 22** or email [info@ipi.net.au](mailto:info@ipi.net.au)

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