

Aflatoxin- Always a Hazard

Neeta Mathuria*

Department of Zoology, Cadila Pharmaceuticals Ltd, India

***Corresponding Author:** Neeta Mathuria, Department of Zoology, Cadila Pharmaceuticals Ltd, India.

Received: October 30, 2017; **Published:** December 08, 2017

One of the most common and frequently encountered food-borne toxicant is aflatoxin which poses serious health hazards in human beings and animals. It was discovered in early 1960 as a causative agent of "Turkey-X-Disease" in England which caused death of thousands of turkey poults, ducklings and chicks that were fed on diet containing *Aspergillus flavus* contaminated Brazilian peanut meal. This discovery helped to encourage scientific curiosity in the line of food contaminants. There are four generally recognized aflatoxins, designated as B1, B2, G1 and G2. They are a group of highly substituted coumarins containing a fused dihydrofuran moiety. The order of toxicity is B1 greater than G1, greater than B2, greater than G2. Aflatoxin B and aflatoxin G give blue and green fluorescence under UV light respectively. Aflatoxin B2 and G2 are dihydro derivatives of B1 and G1. Aflatoxin B2 and G2 are essentially biologically inactive unless these agents are first metabolically oxidized to AFB1 and AFG1 *in vivo*. Aflatoxin B1 is the major aflatoxin produced by most species under culture conditions. The metabolites M1 and M2 are found in milk. Now it is well known that aflatoxins are secondary toxic fungal metabolites produced by *Aspergillus flavus* and *Aspergillus parasiticus*. Aflatoxins are seen to contaminate corn, cereals, sorghum, peanuts and other oil-seed crops. Although natural occurrence of aflatoxin in various food/feed stuffs have been reported from various countries and on vast array of crops, comparatively higher concentrations of aflatoxin were recorded from tropical and subtropical countries where environmental conditions are more congenial for mouldy growth and toxin production. The safe tolerance limit of aflatoxin B1 concentration in food/feed stuffs is 30 ppb. Food contamination by this group of mycotoxins have been implicated in both animals and human aflatoxicosis. Aflatoxin is well known hepatotoxic, hepatocarcinogenic, teratogenic and mutagenic agent. Aflatoxins have been incriminated in Indian childhood cirrhosis, acute hepatic failure and Reye's syndrome. Epidemiological as well as clinical and experimental studies revealed that short exposure to large doses of aflatoxins produce acute toxicity which may be lethal while exposure to small doses over a protracted period of time is carcinogenic. Little is known about the moderate concentration of aflatoxin which occur in tropical and subtropical countries. Aflatoxin B1 is primarily metabolized by microsomal mixed function oxidase (MFO) system in the liver and other organs forming in addition to many hydroxylated detoxified products which subsequently are conjugated and excreted, a variety of reactive products that interact with various macromolecules such as DNA, RNA and proteins. Both metabolized and unmetabolized forms of aflatoxins are recorded in serum, urine, milk and saliva. Oxidative stress occurs in a cell or tissue when the concentration of reactive oxygen species (ROS) generated exceeds the antioxidant capacity of those cells. Thus, in any of its form aflatoxin is dangerous for the health of human beings and animals. This has prove to be one of the biggest problem for the living being to survive as it has entered in the basic food/feed stuffs at one or another stage and knowingly or unknowingly is being consumed on a large scale.

Volume 13 Issue 4 December 2017

© All rights reserved by Neeta Mathuria.