

Occurance of Mycotoxins and Mycotoxicosis in Poultry

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Received: 📅 October 01, 2018; Published: 📅 October 09, 2018

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Opinion

Mycotoxins are biologically active, toxic metabolites produced by toxigenic fungi mainly belonging to *Aspergillus*, *Fusarium* and *Penicillium* species, which invade crops in the field and may grow on feedstuffs during storage under favourable conditions of temperature and humidity [1]. FAO estimated that about 25% of food and feedstuffs are contaminated with mycotoxins and strong efforts have been made to decontaminate them by the use of physical and chemical adsorbents but the success made so far is limited [2]. Like other environmental pollutants, mycotoxins also adversely affect the health and productivity in animals and especially in poultry [3,4]. The economy of poultry industry is heavily affected due to wide mycotoxin exposure or contamination of various agricultural commodities. The economic losses are primarily due to the decreased growth rate, feed conversion efficacy, carcass yield, carcass quality and increased susceptibility to other diseases caused due to their immunosuppressive effects among the affected poultry. A mycotoxicosis is a disease caused by a natural toxin produced by a fungus. In poultry, this usually results when toxin producing fungi grow in grain and feed. Hundreds of mycotoxins have been identified, and many are pathogenic. Mycotoxins may have additive or synergistic effects with other natural toxins, infectious agents, and nutritional deficiencies. Many are chemically stable and maintain toxicity over time. Out of more than 350 mycotoxins identified in nature, aflatoxins, T-2 toxin, diacetoxyscirpenol, vomitoxin, zearalenone, ochratoxins, ergot alkaloids, oosporein, cyclopiazonic acid, and trichothecenes are the most common and important in poultry [5].

Mycotoxicosis and Their Effect in Poultry

Aflatoxicosis: The aflatoxins are toxic and carcinogenic metabolites such as *Aspergillus flavus*. Aflatoxicosis in poultry primarily affects the liver but can involve immunologic, digestive, and hematopoietic functions. Aflatoxin can adversely affect weight gain, feed intake, feed conversion ratio, pigmentation, carcass yield, egg production, male and female fertility, and large hatchability problems. Some effects are directly attributable to toxins, whereas others are indirect, such as reduced feed intake. Susceptibility to aflatoxins varies, but in general, ducklings, turkeys, and pheasants are susceptible, while chickens and Japanese quail are relatively resistant. Clinical signs vary from general unthriftiness to high morbidity and mortality. At necropsy the lesions are found mainly in the liver, which can be due to necrosis and congestion or yellow due to lipid accumulation. Hemorrhages may occur in liver and other tissues. In chronic aflatoxicosis, the liver becomes yellow to gray and atrophied.

Fusariotoxigenesis: The genus *Fusarium* produces many mycotoxins injurious to poultry. The trichothecene mycotoxins produce caustic and radiomimetic patterns of disease exemplified by T-2 toxin and diacetoxyscirpenol (DAS). Deoxynivalenol (vomitoxin, DON) and zearalenone are common trichothecene mycotoxins that are relatively nontoxic for poultry but may cause disease in large concentrations in feed. Fusariotoxigenesis in poultry caused by the trichothecenes results in feed refusal, caustic injury of the oral mucosa and areas of the skin in contact with the mold,