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The Impact of Aflatoxin B1 on Pig (*Sus scrofa*) and Human (*Homo sapiens*)

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Abstract

Aflatoxins (AF) are a serious problem in diets of both humans and animals, including livestock such as pigs. These are secondary metabolites, also known as mycotoxins, produced mainly by molds and some filamentous fungi, which occur naturally in the environment, including in the soil and in improperly stored feed. Among the worst toxins in this group are believed to be aflatoxin B1, which is the most toxic form found and has both been identified as the most potent, natural carcinogen.

AFB1 is most found in food and fodder Exposure of both humans and pigs to aflatoxins can cause a variety of chronic or acute inflammation, depending on the dose consumed. The most common symptoms include weight loss, poor performance, and impaired function. In addition, several other aflatoxin-related pathologies have been demonstrated in humans and animals, such as malnutrition diseases, delayed physical and mental maturity, reproductive changes and nervous system diseases. However, the liver is the most affected organ after aflatoxin B1 ingestion.

From a molecular point of view, AFB1 is biotransformed by cytochrome P450 (CYP450) microparticle oxidases to produce reactive oxygen species (ROS) clusters that cause oxidative stress reactions. Hepatocytes are the most important cells that synthesize the CYP450 enzyme, making AFB1 the most influential on proper liver functioning. Whereas oxidative stress plays a key role in AFB1's induction of DNA damage in cells, which contributes to mutations, including cancer-related mutations.

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