

# THE EFFECTS AND MECHANISMS OF ACTION OF ZEARALENONE AND *E. COLI*-LPS CO-CONTAMINATION ON PORCINE INTESTINAL EPITHELIAL CELLS

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## Abstract

Zearalenone (ZEA) is one of the most widespread fusariotoxins, which affects mainly the reproductive system, but it can also disturb the activity of the immune, nervous, and digestive system. Humans and animals are exposed to ZEA through the ingestion of contaminated food or feed, pigs being the most sensitive species, due to their rich diet in cereals and their native sensitivity to mycotoxins. In this *in vitro* study performed on the porcine intestinal cell line IPEC-1, the effects of ZEA on the oxidative stress and inflammation at intestinal level were studied. The gene expression of some antioxidant enzymes (CAT, SOD, Gpx) were analyzed, also pro-inflammatory cytokines (TNF- $\alpha$ , IL-1 $\beta$ , IL-6, IL-8) and signaling molecules (NF-KB, p-38 $\alpha$ , PPAR $\gamma$ , Nrf2, KEAP, HO1, NQO1) were quantified using real-time PCR, furthermore ROS levels were determined by flow cytometry. Our results showed that ZEA can reduce the gene expression of the pro-inflammatory cytokines IL-1 $\beta$  and IL-8, but also of NF-KB, p-38 $\alpha$  and PPAR $\gamma$ , inflammatory mediator molecules, without inducing significant effects at the level of oxidative stress markers.

**Key words:** Zearalenone, Intestine, Inflammation, Oxidative Stress, Pigs