

Low concentration of Zearalenone affects the biochemical and immunological parameters in swine

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Abstract

Zearalenone (ZEA) is a mycotoxin produced by fungi of the genus *Fusarium*, that frequently contaminate wheat, barley and rye crops and affects both human and animal health. Swine is one of the most susceptible species to ZEA intoxication, this fact being due to the high intake of cereals in the diet, but also to a high sensitivity to mycotoxins. The aim of this study was to investigate the effects produced by exposure of weaned piglets to a low dose of ZEA. Some immune parameters as immunoglobulins (IgG, IgA, IgM), nitric oxide (NO) and also biochemical parameters related to energetic (glucose, cholesterol, triglyceride), proteic (total protein, albumin, urea, creatinine), mineral (Ca, Fe, Mg, P) profile as well as the activity of some hepatic enzymes (aspartate amino-transferase, alanine-amino-transferase, gamma-glutamyl transferase and alkaline phosphatase) were assessed in piglets serum. The *in vivo* experiment was performed on 12 crossbred weaned piglets (TOPIGS-40), randomly assigned to two groups (6 animals/group): control group (C) fed uncontaminated feed and experimental group (E) fed a ZEA contaminated diet (75 µg/kg feed) for 21 days. The main immunological change induced by ZEA was the decrease in IgG ($P=0.0428$) and NO concentration ($P=0.0176$). The exposure to ZEA significantly decreased the bilirubin concentration ($P=0.0077$) and tended to decrease the serum glycemia ($P=0.07$). By contrast ZEA increased the triglycerides concentration ($P=0.0004$) and gammaGT activity ($P=0.0003$). In conclusion, ZEA can affect immunological and biochemical parameters in weaned piglets, even in concentrations lower than recommended by European Commission for swine feed.

Keywords: biochemistry, immunology, swine, zearalenone.

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References

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