

Effects of feeding a blend of grains naturally contaminated with *Fusarium* mycotoxins on growth and immunological measurements of starter pigs, and the efficacy of a polymeric glucomannan mycotoxin adsorbent¹

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ABSTRACT: An experiment was conducted to investigate the effects of feeding a blend of grains naturally contaminated with *Fusarium* mycotoxins on growth and immunological parameters of starter pigs. A polymeric glucomannan mycotoxin adsorbent (GM polymer, Alltech Inc., Nicholasville, KY) was also tested for its efficacy in preventing *Fusarium* mycotoxicoses. A total of 150 starter pigs (initial weight of 9.3 ± 1.1 kg) were fed one of five treatment diets (six pens of five pigs per diet) for 21 d. Diets included control, low level of contaminated grains, high level of contaminated grains, high level of contaminated grains + 0.20% GM polymer, and pair-fed control for comparison with pigs receiving the high level of contaminated grains. Feed intake and cumulative weight gain of pigs decreased linearly with the inclusion of contaminated grains in the diet throughout the experiment ($P < 0.0001$). Weight gains recovered, however, during wk 3 ($P > 0.05$). There was no difference between the pair-fed group and the pigs fed the diet containing the high level of contaminated grains in terms of weight gain or feed efficiency ($P > 0.05$). Feeding contaminated grains linearly increased the serum albumin:globulin ratio ($P = 0.01$), whereas serum urea concentrations and γ glutamyltransferase activities responded in a quadratic fashion ($P = 0.02$). When compared with the pair-fed pigs, serum concentrations of total protein ($P = 0.01$) and globulin ($P = 0.02$) were decreased in pigs fed the diet containing the high level of contaminated grains. The feeding of contaminated diets did not significantly alter organ weights expressed as a percentage of BW, serum immunoglobulin concentrations, percentages of peripheral blood lymphocyte subsets, contact hypersensitivity to dinitrochlorobenzene, or primary antibody response to sheep red blood cells ($P > 0.05$). It was concluded that most of the adverse effects of feeding *Fusarium* mycotoxin-contaminated grains to starter pigs were caused by reduced feed intake. Although supplementation of GM polymer to the contaminated diet prevented some toxin-induced changes in metabolism, it did not prevent the mycotoxin-induced growth depression under the current experimental conditions.

Key Words: Fursaric Acid, *Fusarium*, Immune Response, Mycotoxins, Pigs, Vomitoxin
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81:2792–2803

¹This study was supported by the Ontario Ministry of Agriculture and Food and by Alltech Inc., Nicholasville, KY.

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Received February 12, 2003.
Accepted June 9, 2003.