

Effects of benzoic acid and enzyme blend on growth performance, nutrient digestibility and incidence of post-weaning diarrhea in weaned pigs

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To replace antibiotics included in nursery diets to manage post-weaning diarrhea (PWD), alternative dietary strategies are required. Dietary supplementation of benzoic acid (BA) and enzyme blend (ENZ) may enhance growth performance and reduce PWD. To test this, diets were formulated without antibiotics to provide 5.3 g standardized ileal digestible (SID) Lys/Mcal NE, and 22% CP. At 7 d post-weaning, pigs (n = 200; 7 kg initial BW) were assigned randomly to be fed 5 test diets for 3 weeks: positive control (Ctrl+; 2.37 Mcal NE/kg enriched with canola oil); negative control (Ctrl-; 2.27 Mcal NE/kg by reducing canola oil); and 3 diets that supplemented the Ctrl- with either 0.5% BA, 0.045% ENZ (phytase, β -glucanase, xylanase, and α -amylase), or both BA and ENZ (BAE). PWD (measured as % day within week of diarrhea incidence) was 31% lower in pigs fed BAE than Ctrl-. For the entire study, PWD increased and then declined (40, 56, and 22% for week 1, 2, and 3, respectively). Performance and apparent total tract digestibility (ATTD) of CP and GE did not differ between Ctrl- and Ctrl+; predicted NE value was 0.09 Mcal /kg lower for Ctrl- than Ctrl+. The ADG increased 9% by feeding BA, but not by ENZ, compared with Ctrl-. The BA or ENZ did not increase apparent ileal digestibility or nutrients compared with Ctrl-. Inclusion of BAE increased ATTD of CP and GE, and NE value by 3.4, 2.8, and 5.9%, respectively compared with Ctrl-. Ileal digesta pH was reduced 0.49 pH unit by inclusion of ENZ compared with Ctrl-, but not by BA.

Implications: Dietary antibiotics have been banned as growth promoters in the EU since 2006. Inclusion of BA increased nutrient digestibility that resulted in increased ADG. BAE increased nutrient digestibility that coincided with reduced PWD. Thus, supplementation of BA and/or ENZ may serve as replacement of feed antibiotics after weaning to improve nutrient utilisation and reduce PWD, and thereby enhance growth performance in weaned pigs.