

The effects of dietary supplementation with a stabilized form of vitamin C (Rovimix® Stay-C® 35) on the growth performance and concentrations of plasma ascorbate and serum vitamin D₃ metabolites of nursery pigs.

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A total of 488 pigs (6.1 kg and 21-d of age) were used in a 34-d experiment to evaluate the effects of supplementation with stabilized vitamin C (Rovimix® Stay-C® 35) on performance and concentrations of plasma ascorbate and serum vitamin D₃ metabolites of nursery pigs. After weaning (d 0), pigs were sorted by BW into 56 nursery pens of 8 or 9 pigs each. Additionally, 8 pairs of littermate gilts were identified prior to weaning for collection of blood samples on d 0, 11, and 34 post-weaning. The littermates were separated at weaning and each randomly assigned to 1 of 2 nursery pens within 8 BW blocks. Pens within each block were randomly allotted to 1 of 2 dietary treatments and there were 28 pens per treatment. Pen served as the experimental unit for evaluation of growth and economic criteria in a RCBD, but individual pigs served as the experimental unit for comparison of blood measurements. Dietary treatments consisted of 1) Control (NC) – a 3-phase starter program (d 0 to 10, d 10 to 20, and d 20 to 34); and 2) Vitamin C supplemented (VC) – as treatment 1, but with 300 ppm added vitamin C from d 0 to 10 and 150 ppm added vitamin C from d 10 to 34. Response criteria were ADG, ADFI, G:F, and concentrations of plasma ascorbate and serum 25(OH)D₃; 1,25(OH)₂D₃; and 24,25(OH)₂D₃ on d 11 and d 34 post-weaning. Value of BW gain was determined using \$1.32/kg; and performance, diet costs, and value of gain were used to determine feed cost per kg of gain (\$/kg gain) and income-over-feed-cost (IOFC). Overall ADG, G:F, and IOFC were improved (9%, 4%, and \$0.73/pig, respectively; *P* < 0.05). and there were tendencies (*P* < 0.10) for greater ADFI (5%) and reduced \$/kg gain (\$0.02), for pigs fed VC. On d 11; plasma ascorbate (1.16 vs. 0.76 mg/dL), serum 25(OH)D₃ (10.02 vs. 7.24 ng/mL) and serum 1,25(OH)₂D₃ (41.36 vs. 36.27 pg/mL) were numerically greater, and serum 24,25(OH)₂D₃ tended (*P* < 0.10) to be greater (1.97 vs. 1.35 ng/mL), for pigs fed VC. On d 34; only serum 1,25(OH)₂D₃ (48.83 vs. 43.91 pg/mL) and 24,25(OH)₂D₃ (2.06 vs. 1.74 ng/mL) were numerically greater for pigs fed VC. In conclusion, supplementation with stabilized vitamin C improved the growth, nutritional status, and economic performance of nursery pigs in this experiment.

Keywords

Pigs

Post-weaning performance

Vitamin C