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Production Assistants
Steven Claas
Michael Klatt

Layout and CD-ROM
David Brown

Logo Design
Ruth Cronje, and Jan Swanson;
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Removal of dietary antimicrobials during oral vaccination does not decrease wean-to-finish productivity

B Lawrence[1], R Edler[1], K Schwartz[2], D Walter[1], T Holck[1], M Musselman[1]
1)Boehringer Ingelheim Vetmedica Inc., Ames, IA; 2)Iowa State University, Ames, IA

Introduction

Oral vaccination of pigs with an attenuated *Lawsonia intracellularis* vaccine (Enterisol® Ileitis, Boehringer Ingelheim Vetmedica, Inc.) via drinking water is a common management practice to prevent/control proliferative enteropathy. Removal of dietary antimicrobials for at least a 7-day period ("non-medicated window", NMW) around vaccination is needed to avoid vaccine inactivation. This study assessed the wean-to-finish productivity impact of removal of dietary antimicrobials for a 10-day period to facilitate vaccination.

Materials & Methods

Four hundred (400) weaned pigs were weaned at approximately 3 weeks of age (5.05 ± 0.85 kg) and housed at 10 pigs/pen to market at 157 days post-weaning. There were 10 pens (replicates) of 4 treatments (Table 1). All pigs were fed non-medicated diets from D45 to D157. A 10-day non-medicated period was provided from D21-31 in treatments NMWa & NMWb. This corresponds to a period appropriate for *Lawsonia* vaccination for many US producers.

Table 1."Nursery" Feed Medication Program

Group	Diet 1 D0-7	Diet2 D7-14	Diet2 D14-21	Diet 3 D21-31	Diet4 D31-45
NM	NM	NM	NM	NM	NM
CM	DC	DC	D35	DC	D35
NMWa	DC	DC	D35	**NM**	D35
NMWb	D200	D200	DC	**NM**	DC

CM=continuous med; NM=non-medicated; DC=tiamulin 35g/t + CTC 400g/t; D35= tiamulin 35 g/t; D200=tiamulin 200g/t

Pen weights were obtained days 0, 7, 14, 21, 31, 45, 73, 101, 129, 157. Serum was serially obtained from 20 pigs/group (2/pen). The non-medicated (NM) and NMWa and NMWb pigs were vaccinated via drinking water with Enterisol Ileitis on D24. Continuous medication (CM) pigs were vaccinated D49 post-weaning.

Results

Tested pigs were predominantly negative for PRRS antibody by ELISA on D0. By D31 nearly all pigs tested positive. SIV antibodies were present at weaning and declined until D45 post-weaning. SIV seroprevalence increased again at D73.

Table 2. ADG (g/d) response to treatment

Days	NM	CM	NMWa	NMWb	P<
0 – 21	212.8[a]	257.6[ab]	261.9[ab]	271.7[b]	0.05
21 – 31	245.0	272.6	237.5	276.7	0.67
0 – 45	317.1[a]	384.4[b]	365.6[ab]	396.9[b]	0.01
45 – 157	855.2	871.8	875.4	882.7	0.37
0 – 157	705.0	734.1	732.7	744.8	0.09
Day 157 wt, Kg	115.7	120.3	120.1	122.0	0.14

Significant improvement in ADG with antimicrobial addition was observed in 1 of 3 medicated groups during D0-21 and in 2 of 3 medicated groups during D0-45. There was no ADG advantage with antimicrobial addition during D21-31 for CM pigs versus NM or NMWa or NMWb pigs indicating no negative productivity impact of the NMW.

Table 3. Cumulative mortality, %

Days	NM	CM	NMWa	NMWb	P>
0-45	6.0	6.0	7.0	5.0	0.94
0-157	14.0	6.0	9.0	6.0	0.16

Mortality rate increased in all groups in the "nursery" period during PRRS seroconversion. Mortality rate increased more rapidly for NM pigs during "finishing" corresponding with SIV seroconversion. There were no significant differences in mortality rates between groups.

Discussion

Growth rate was not decreased and mortality was not increased during any wean-to-finish production period in pigs provided a 10-d non-medicated vaccination window compared to continuously medicated pigs. Providing a non-medicated period for *Lawsonia* immunization further reduces overall dietary antimicrobial usage.