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Clinical responses and performance of pigs treated with tulathromycin injectable solution (DRAXXIN®) for swine respiratory disease (SRD)

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INTRODUCTION

Draxxin® Injectable Solution was introduced to the US swine industry in 2005 for single-dose treatment of swine respiratory disease (SRD) caused by *Actinobacillus pleuropneumoniae, Pasteurella multocida, Bordetella bronchiseptica, Haemophilus parasuis* and since 2008 *Mycoplasma hyopneumoniae* (MHYO).

Two studies are reported: Study 1 compared Draxxin-treated pigs to pigs injected saline or conventional on-farm therapy (OFT; penicillin G procaine) in a natural outbreak of SRD; Study 2 tested Draxxin against SRD induced using a live MHYO challenge and compared to saline injected pigs. Both studies tracked clinical response and performance (gain and feed efficiency).

MATERIALS and METHODS

Study 1. One hundred seventy pigs (170) from two farms positive to various bacterial and viral respiratory pathogens were commingled with 200 single-source Isowean pigs of similar age and weight. The 370 total pigs were housed in a conventional finisher unit equipped with an AutoSort food court providing feed and electronically capturing individual weights. Pigs with SRD (n=135; 36% morbidity) were enrolled in a 1:2:2 ratio to saline (control), OFT (penicillin G procaine IM; 5 mL/100 lb/day for 2 consecutive days), or Draxxin (IM; 1 mL/90 lb, once) treatment. Pigs were observed daily, clinically evaluated and weighed 7- and 56-days after treatment. **Study 2.** Two hundred (200) weaned pigs, MHYO sero-negative were challenged intra-tracheally once daily for three consecutive days with a live culture of the organism. Ninety-six (96) pigs meeting SRD-criteria were enrolled and randomly assigned to 24 pens. Each pen (the experimental unit) contained only pigs treated with saline or Draxxin. Pig weights and feed consumption were measured at 10, 20, 30, 45, and 60 days post-treatment; response to therapy was evaluated 10-days post-treatment

RESULTS

Study 1. Compared to the saline controls, pigs treated with Draxxin had a numerically reduced mortality rate 7-days post-treatment and had a significantly (P = 0.0360) lower mortality rate over the 56-day study. Further, pigs treated with Draxxin had a significantly (P = 0.0409) higher mean gain (8.3 lb) compared to the controls (6.2 lb) at 7-days post-treatment. Overall, the mean gain in pigs treated with Draxxin was 10 lb higher than pigs in the OFT group (P = 0.0597) and 16 lb higher than controls (P = 0.0268), when adjusted to the 75th percentile of mean weight at enrollment. **Evidence Based Medicine; quantifying magnitude of clinical effects**. At the end of one week post-treatment, Draxxin (1 dose) was 1.6 times less likely to fail treatment than the conventional antimicrobial therapy; and were 1.85 times less likely to fail than non-treated pigs. The reductions in treatment failure on a 100-head basis was 16.45% comparing Draxxin to two-injections of penicillin G procaine and 25% (25 out of 100 head) compared to not treating (i.e., using saline). Draxxin reduced the risk of treatment failure by 36% compared to penicillin, and 46% compared to not treating ill pigs. In field situations similar to this study six [6] pigs treated with Draxxin would offset one treatment failure projected to occur using two injections of penicillin. **Study 2.** Pigs with SRD and treated with Draxxin had a significantly ($P \leq 0.0121$) improved average daily gain (1.63 to 1.99 lb/hd/day) compared to control pigs (1.35 to 1.77 lb/hd/day). Feed consumption was higher in the Draxxin group with a corresponding improvement in Feed:Gain (2.78 lb) compared to controls (3.58 lb; P = 0.1032). Pigs treated with Draxxin had a lower mortality rate (8.7% vs 4.2%). At the 10-day evaluation and compared to controls, the proportion of pigs in the Draxxin group returning to "normal" for attitude/depression and respiratory character was 11% and 24% higher, respectively.

CONCLUSION

These studies demonstrate that pigs with SRD and treated once with Draxxin Injectable Solution, under field conditions, or under an experimentally induced MHYO challenge, showed an improved health response and performance with one treatment. This reduces antimicrobial use and the stress of animal handling and dosing in multiple day therapy regimens.

REFERENCES

1. Data on file, Study Reports No. 1123R-60-07-283 and 1121R-60-07-292, Pfizer Inc.