Efficacy of DRAXXIN, followed by 7-, 10-, or 14-day post-treatment intervals, against naturally occurring bovine respiratory disease in high-risk calves to close

Key Points
- DRAXXIN (diffusible minocycline) administered as a single subcutaneous (SQ) injection is an appropriate therapy for the treatment of bovine respiratory disease (BRD) in high-risk bull calves.
- Through 14 days or more, there was no significant difference in treatment response.
- Bovine respiratory disease (BRD) mortality or average daily gain (ADG) with a 7-, 10-, or 14-day minimum post-treatment interval (PFI).
- PFI did not significantly affect treatment success, providing management flexibility based on managerial, labor, and market factors.

Introduction
DRAXXIN is a highly effective, single-dose antimicrobial treatment indicated for the treatment of bovine respiratory disease to control at high risk of developing BRD caused by Rhodococcus equi, Pasteurella multocida, and Hemophilus somnus. Bovine respiratory disease (BRD) mortality and average daily gain (ADG) with a 7-, 10-, or 14-day minimum post-treatment interval (PFI) did not significantly affect treatment success, providing management flexibility based on managerial, labor, and market factors.

Based on results of studies with EXCEDE (tedyfosol fumarate) plus tilmicosin phosphate and with AEMO PLUS, the concept of post-treatment PFI was introduced.

Data showed that a single administration of EXCEDE provided effective concentrations of medication against the targeted pathogens of BRD for at least 7 days.

For control of respiratory disease in cattle at high risk of developing BRD, it has been well documented in multiple studies.
than has been done previously. With any sick animal, reassessment of the diagnosis and monitoring of response to treatment are very important to selecting an optimal PTI, as well as to subsequent adjustments to treatment according to the needs of the patient.

Results

Within 56 days there was no significant difference in treatment success. BRD mortality or A180 failure in feeder calves with 7-, 10- or 14-day PTIs. The DRAXXIN first treatment success rate (the percentage of animals that did not qualify for re-treatment, were not treated for BRD mortality, and were not treated for non-BRD reasons) was not significantly different (P > 0.31) for calves with 7-, 10-, or 14-day PTIs. Cumulative distribution of first treatments are shown in Figure 1. Figures 3 and 4 show treatment by cardinal signs. Time to 50% of treatments for the 7-, 10- and 14-day groups, corresponds to days 21 and 32 for the study group, respectively.

Although the active ingredients in EXCEDE and DRAXXIN are chemically distinct, the targeted pathogens and approved uses and management applications of the 2 products are similar. In previous studies of DRAXXIN, animals receiving treatment schedules could be treated 3 days after receiving the initial treatment and would not be re-treated if they failed to appropriately respond to DRAXXIN. This study allows for single treatments followed by a single injection of effective re-treatment.

Discussion

First re-treatment was with A180, which had third re-treatment was with Nuflor, 6 mg flufenicol/kg. Both re-treatment was with Nuflor, 6 mg flufenicol/kg, and third re-treatment was with Nuflor, 6 mg flufenicol/kg, in this study. Although the active ingredients in EXCEDE and DRAXXIN are chemically distinct, the targeted pathogens and approved uses and management applications of the 2 products are similar. In previous studies of DRAXXIN, animals receiving treatment schedules could be treated 3 days after receiving the initial treatment and would not be re-treated if they failed to appropriately respond to DRAXXIN. This study allows for single treatments followed by a single injection of effective re-treatment.

Conclusion

There was no significant difference during the initial 56 days as to treatment success. BRD mortality or ADG in feeder calves with 7-, 10- or 14-day PTIs following a single DRAXXIN injection for the treatment of BRD. A180 is not to be used in cattle intended for dairy production at any rate of any other food-producing animal. Do not use in female dairy cattle 20 months of age or older. Effects on reproductive performance, pregnancy and lactation have not been determined. Do not use in calves to be processed for veal. Do not use in chickens or turkeys. Do not use in animals known to be hypersensitive to the product.
than has been done previously. With any sick animal, re-assessment of the diagnosis and monitoring of response to treatment are very important to selecting an optimal PTI, as well as to subsequent adjustments to treatment according to the needs of the patient. Re-treatment patterns are valuable parameters to monitor on individual operations to help determine what the optimum PTI should be for any single-injection or extended-duration treatment. Previous studies with EXCEDE and A180 are chemically distinct, the targeted pathogens and approved use of the 2 products are similar. Previous studies with A180 are discussed at the end of this technical bulletin. Both studies found no significant difference in treatment success, BRD mortality or ADG in feeder calves with 7-, 10- or 14-day PTIs. The DRAXXIN study had cattle that met re-treatment criteria were eligible to be re-treated 3 days after they received DRAXXIN. The study was not designed and analyzed statistically to compare treatment groups, but monitoring these trends could be valuable to help producers and veterinarians capitalize on the variability of results in achieving their clinical success goals. Traditional management practices of repeated administration of antibiotics are not intended to be a substitute for the animal to respond and begin recovery following a single injection of effective medication. The purpose of this study was to compare the effects of 3 PTIs (7, 10 or 14 days) on the incidence of BRD in high-risk feeder calves following initial treatment with DRAXXIN. Materials and Methods Crossbred feeder calves, which originated from select sites (A180, Pfizer) and locations, were housed in 36 to 48 pens by treatment group, where they remained until slaughter. Cals were fed to close and shipped to slaughter on 2 consecutive days. Cattle were fed to close and shipped to slaughter on 2 consecutive days. Table 3. Summary of Carcass Data***

<table>
<thead>
<tr>
<th>Non-Response (%)</th>
<th>23.0 (51)</th>
<th>31.7 (66)</th>
<th>24.1 (59)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Success</td>
<td>87.6 (199)</td>
<td>87.3 (120)</td>
<td>85.9 (102)</td>
</tr>
<tr>
<td>ADG (lb/day)</td>
<td>4.2 (10)</td>
<td>3.7 (9)</td>
<td>2.5 (9)</td>
</tr>
<tr>
<td>Dark Cutter</td>
<td>4.09</td>
<td>4.14</td>
<td>3.75</td>
</tr>
<tr>
<td>Heiferette</td>
<td>4.09</td>
<td>4.14</td>
<td>3.75</td>
</tr>
<tr>
<td>MLR</td>
<td>51.6</td>
<td>54.2</td>
<td>51.2</td>
</tr>
<tr>
<td>BCS</td>
<td>2.9</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Table 3. Summary of Carcass Data***

No. of Animals

- 7-Day PTI: 250
- 10-Day PTI: 250
- 14-Day PTI: 250

Treatment Success

- 7-Day PTI: 80.0% (200/250)
- 10-Day PTI: 80.0% (200/250)
- 14-Day PTI: 80.0% (200/250)

ADG (lb/day)

- 7-Day PTI: 2.85 (0.68 – 4.02)
- 10-Day PTI: 2.89 (0.75 – 4.02)
- 14-Day PTI: 2.89 (0.75 – 4.02)

Conclusion

There was no significant difference throughout the initial 56 days—21 days from treatment success, BRD mortality or ADG in feeder calves with 7-, 10- or 14-day PTIs following a single DRAXXIN injection for the treatment of BRD. ADX is not to be used in cattle intended for dairy production or veal or in any other food-producing animal. Do not use in calves destined for dairy production 20 months of age or older, veal calves 20 months of age or older or in any other food-producing animal. Use is contraindicated in animals previously found to be hypersensitive to the drug. Though safe in cattle when properly given, inadvertent intra-arterial injection in the ear is possible and is fatal. EXCEDE has a preslaughter withdrawal time of 30 days. Do not use in animals known to be hypersensitive to the product. As with any drugs, the use of EXCEDE and similar antibiotics is contraindicated in animals previously found to be hypersensitive to the drug. Though safe in cattle when properly given, inadvertent intra-arterial injection in the ear is possible and is fatal. EXCEDE has a preslaughter withdrawal time of 30 days.

Table 1. Summary of Results Through Day 56

<table>
<thead>
<tr>
<th>Non-Response (%)</th>
<th>7.6 (19)</th>
<th>12.0 (30)</th>
<th>9.9 (24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Success</td>
<td>92.4 (232)</td>
<td>92.4 (232)</td>
<td>90.1 (226)</td>
</tr>
<tr>
<td>ADG (lb/day)</td>
<td>2.89 (0.68 – 4.02)</td>
<td>2.89 (0.68 – 4.02)</td>
<td>2.89 (0.68 – 4.02)</td>
</tr>
<tr>
<td>Dark Cutter</td>
<td>4.09</td>
<td>4.09</td>
<td>4.09</td>
</tr>
<tr>
<td>Heiferette</td>
<td>4.09</td>
<td>4.09</td>
<td>4.09</td>
</tr>
<tr>
<td>MLR</td>
<td>51.6</td>
<td>51.6</td>
<td>51.6</td>
</tr>
<tr>
<td>BCS</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
</tr>
</tbody>
</table>

**Table 2. Summary of Results in Chronic***

No. of Animals

- 7-Day PTI: 250
- 10-Day PTI: 250
- 14-Day PTI: 250

Discussion

Phase 1 Animal Health validated the concept of a prolonged PTI—a period of time after treatment when re-treatment is recommended to help prevent re-infection. The study results confirm that the efficacies of DRAXXIN and A180 are chemically distinct, the targeted pathogens and approved use of the 2 products are similar. However, the targeted pathogens and approved use and management applications of the 2 products are chemically distinct and their use should be evaluated by the veterinarian depending on the needs of the patient.

Re-treatment patterns are valuable parameters to monitor on individual operations to help determine what the optimum PTI should be for any single-injection or extended-duration treatment. Previous studies with DRAXXIN and A180 are chemically distinct, the targeted pathogens and approved use of the 2 products are similar. However, the targeted pathogens and approved use and management applications of the 2 products are chemically distinct and their use should be evaluated by the veterinarian depending on the needs of the patient. Re-treatment patterns are valuable parameters to monitor on individual operations to help determine what the optimum PTI should be for any single-injection or extended-duration treatment. Previous studies with DRAXXIN and A180 are chemically distinct, the targeted pathogens and approved use of the 2 products are similar. However, the targeted pathogens and approved use and management applications of the 2 products are chemically distinct and their use should be evaluated by the veterinarian depending on the needs of the patient.
Although the active ingredients in EXCEDE and DRAXXIN are chemically distinct, the targeted pathogens and approved use of the 2 products are similar. Previous studies with EXCEDE revealed that cattle that met re-treatment criteria were eligible to be retreated 3 days after they received EXCEDE. Therefore, so that animals that met re-treatment criteria were eligible to be re-treated 3 days after they received DRAXXIN.

Materials and Methods
Crossbred heifer feeder calves, which originated from auction sales in Missouri, Arkansas, Kentucky, and Tennessee, were enrolled in the current study. The calves were transported to an on-farm research facility where they were held for 56 days. Crossbred heifers were randomly divided into three treatment groups: 1) DRAXXIN 7-day (PTI = 2.82 lb/day); 2) DRAXXIN 10-day (PTI = 2.72 lb/day); 3) DRAXXIN 14-day (PTI = 2.55 lb/day).

The calves were weighed at the beginning of the study, and the mean weight was 253 lb. The calves were divided into three groups: 1) 12 calves/pen; 2) 24 calves/pen; 3) 30 calves/pen. The calves were given a single injection of EXCEDE or DRAXXIN for the treatment of BRD. The 2 products were administered according to the label directions, and no differences were noted.

Results
The study revealed no significant differences in treatment success, BRD mortality or in ADG. A total of 97 calves was treated with EXCEDE (7-day PTI = 2.95 lb/day, 11.4 lb/100 lb feed and 1.1 groups having a removal PTI of 7.1–10 lb) or 10 (-day PTI = 2.79 lb/day, 12.0 lb/100 lb feed and 1.2 groups having a removal PTI of 7.1–10 lb), respectively. The calves were divided into three management groups: 1) clinical management (CM); 2) clinical management (CM) plus a rectal temperature of 104°F, or to close in treatment success, BRD mortality or ADG in feeder calves with 7-, 10- or 14-day minimum PTIs following a single DRAXXIN injection for the treatment of BRD.

Conclusion
The results of this study revealed no significant differences in treatment success, BRD mortality or ADG in feeder calves with 7-, 10- or 14-day minimum PTIs following a single DRAXXIN injection for the treatment of BRD.

Table 1. Summary of Results to Close

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>No. of Animals</th>
<th>Mean Hot Carcass Weight lb (range)</th>
<th>Gain, Deads Out lb/day (range)</th>
<th>PTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-Day PTI</td>
<td>97</td>
<td>698.6 (467 – 904)</td>
<td>8.88 (7.76 – 9.73)</td>
<td>2.82</td>
</tr>
<tr>
<td>10-Day PTI</td>
<td>97</td>
<td>698.6 (467 – 904)</td>
<td>8.56 (7.76 – 9.73)</td>
<td>2.72</td>
</tr>
<tr>
<td>14-Day PTI</td>
<td>97</td>
<td>698.6 (467 – 904)</td>
<td>8.56 (7.76 – 9.73)</td>
<td>2.55</td>
</tr>
</tbody>
</table>

Discussion
The results of this study revealed no significant differences in treatment success, BRD mortality or ADG in feeder calves with 7-, 10- or 14-day minimum PTIs following a single DRAXXIN injection for the treatment of BRD.
Figure 3. Frequency Distribution of re-treatments for Each Experimental Group

References
Introduction

DRAXXIN® (tulathromycin) is a highly effective, single-dose antibiotic used to treat respiratory disease in cattle at high risk of developing respiratory disease. 

Tulathromycin is rapidly absorbed, distributes widely and provides concentrations in bovine lung for an extended period. 

Efficacy of DRAXXIN®, followed by 7-, 10-, or 14-day post-treatment intervals, against naturally occurring bovine respiratory disease in high-risk calves to close

Key Points

- DRAXXIN® (tulathromycin) is a highly effective, single-dose antibiotic used to treat respiratory disease in cattle at high risk of developing respiratory disease (BBD) in high-risk calves.
- Through 14-day post-treatment intervals, there was no significant difference in treatment outcomes.

References

1. Skogerboe TL, Rooney KA, Nutsch RG, Weigel DJ, Gajewski K, Martin/Williams Job No: 1258074