

# Comparison of Short-Term Health and Performance Effects Related to Prophylactic Administration of Tulathromycin versus Tilmicosin in Long-Hauled, Highly Stressed Beef Stocker Calves\*

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## Introduction

Bovine respiratory disease (BRD) is the most common disease condition in both the stocker and feedlot stages of beef production. This syndrome causes economic loss in the form of treatment costs, loss of growth performance, decreased quality grade, and higher mortality risk. Metaphylactic antimicrobial therapy upon arrival to a feedlot facility has been intensely studied and repeatedly shown to be a cost-effective practice in many production settings. Two approved metaphylactic drugs, tilmicosin and tulathromycin, are members of the macrolide class of antibiotics. The stocker segment of the beef industry is traditionally a grower phase for young, lightweight calves prior to their entry into a feedlot. However, stocker calves are on feed for a much shorter duration than calves in the finishing period in feedlots. Therefore, maintaining a high level of health and growth performance is imperative. The objective of this research was to determine if health and performance differences were present when comparing a longer-acting (tulathromycin) or shorter-acting (tilmicosin) antimicrobial administered to beef stocker calves at arrival.

## Materials and Methods

Two-hundred ninety-three mixed-breed beef bulls and steers of weaning age were procured in the southeastern United States and shipped from Tennessee to Kansas. Twenty-four hours after arrival, each calf received a 2 ml commercial modified-live 4-way viral respiratory vaccine, a 2 ml 7-way clostridial vaccine, injectable ivermectin and bulls were surgically castrated. Calves were randomly allocated to receive subcutaneous (SC) tilmicosin or tulathromycin. To rule out the presence of individuals persistently infected with bovine viral diarrhea virus (BVDV), a standard ear notch biopsy was collected from each individual calf at arrival and tested for BVDV antigen. Calves were revaccinated with the same MLV respiratory vaccine and the 7-way clostridial vaccine 11 days after arrival. Each pen was observed twice daily to identify calves experiencing clinical signs of BRD. Calves registering rectal temperatures equal to

or greater than 104° F (40° C) were classified as individuals experiencing BRD and were treated following a predesigned treatment protocol. At the conclusion of the 43-day stocker phase, all loads exited the facility on the same day. Cattle were weighed individually on the day they left the facility.

## Results

Calves that received metaphylactic tulathromycin displayed significant improvement in morbidity and mortality risk, and first treatment success ( $P < 0.05$ ) compared to tilmicosin calves. Tulathromycin-treated calves also showed a significantly improved average daily gain and feed to gain ratio ( $P < 0.05$ ) compared to tilmicosin-treated calves. Calves treated with tilmicosin had a significantly lower ( $P < 0.01$ ) mean days on feed at first pull when compared to the tulathromycin calves (6.4 days vs. 10.6 days).

## Significance

Under conditions of this study, calves receiving tulathromycin were healthier (displayed less morbidity and mortality, responded more effectively to BRD treatment, and had more healthy days on feed) through a 43-day growing phase compared to calves receiving tilmicosin. This health difference likely accounted for the differences in feed performance between treatment groups. Because stocker cattle have a shorter feeding period compared to finishing cattle, increasing the number of healthy days on feed prior to BRD treatment is necessary to maximize feed performance. Administering tulathromycin at arrival as a metaphylactic agent appears to be an effective tool to optimize both health and performance in beef stocker calves at high risk for respiratory disease.

(\*From Nickell JS, White BJ, Larson RL, *et al.*: Comparison of short-term health and performance effects related to prophylactic administration of tulathromycin versus tilmicosin in long-hauled, highly stressed beef stocker calves. *Vet Ther* 9(2):147-156 2008; used with permission.)