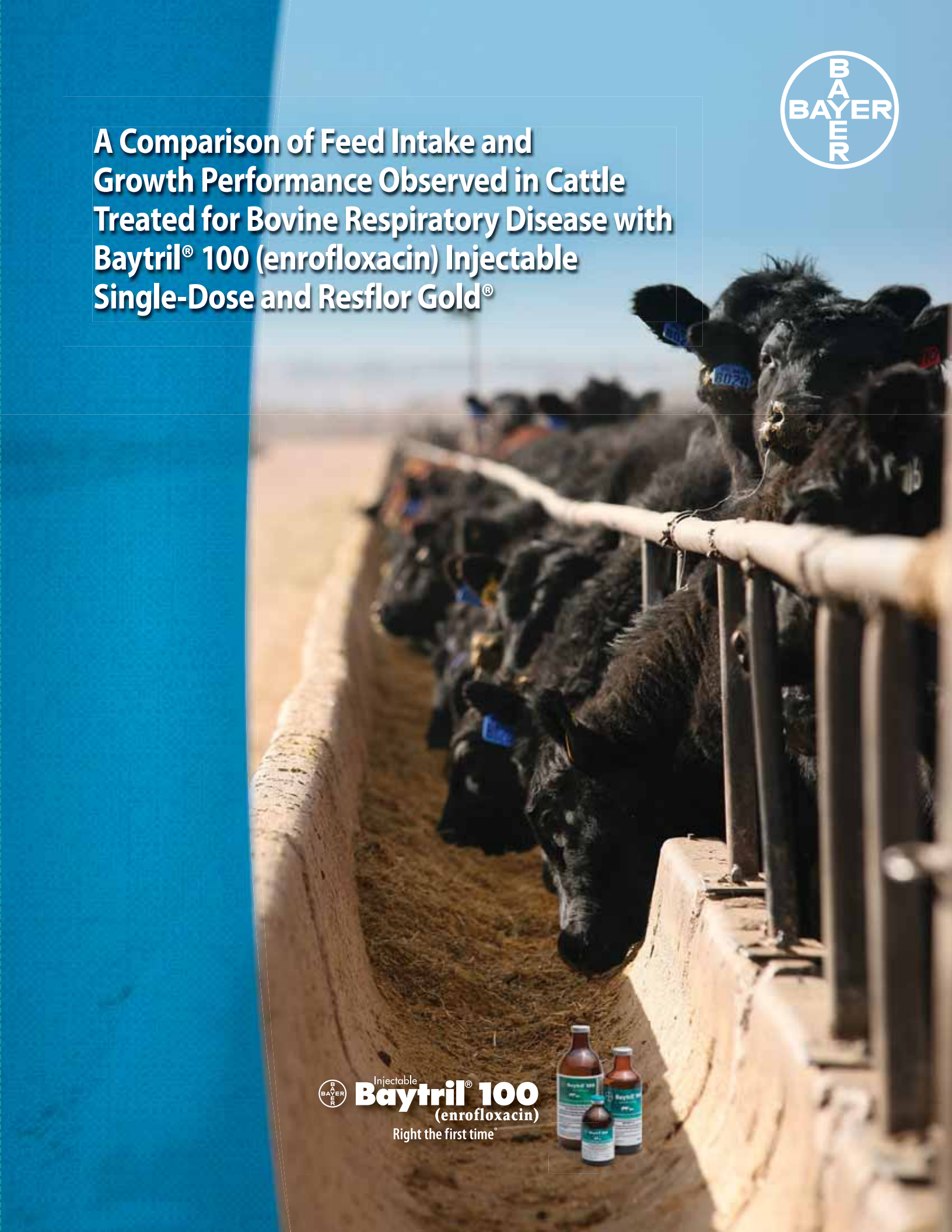
A Comparison of Feed Intake and Growth Performance Observed in Cattle Treated for Bovine Respiratory Disease with Baytril® 100 (enrofloxacin) Injectable Single-Dose and Resflor Gold®



Introduction

It is well documented in the beef industry that Bovine Respiratory Disease (BRD) is the most costly disease. It is a common health challenge among receiving cattle in the United States. Calves affected by BRD have lower finishing weights and also grade lower than healthy animals.

The objective of this experiment was to study feed intake (hereafter referred to as Dry Matter Intake or DMI) of calves prior to and following occurrence of BRD, and to then compare the performance of two different BRD therapy products utilized to treat those calves. Dry Matter Intake, growth and clinical observations were used as indicators of antibiotic performance. The antibiotic treatments used were Baytril® 100 (enrofloxacin) Injectable and Resflor Gold® (florfenicol and flunixin meglumine).

For use by or on the order of a licensed veterinarian.

Study Details

The study was designed with two trials. Trial 1 was conducted in November and December, and Trial 2 was conducted in January and February. Calves for both trials were purchased from an auction market approximately 100 miles from the University of Missouri Beef Research and Teaching Farm near Columbia, commingled at sale facilities, and then transported to the research facility.

For each trial, approximately 100 naïve calves were randomly divided into the 2 treatment groups of 50 calves. The calves were fed in 2 pens that contained animals from both treatment groups. In total, 202 animals were used in both trials. Antibiotic treatment per product label specifications was administered when calves were identified as having a depressed appearance or reduced Dry Matter Intake the previous day, *and* a rectal temperature of 104°F or higher. Animals that never met the treatment criteria were deemed to be healthy and served as a Control group in the data analysis.

Individual intakes were measured daily using the GrowSafe Feed Intake System (GrowSafe Systems®) that employs an electronic ear tag to automatically identify a specific animal when it puts its head in the feed bunk to eat.

Measurements were made of daily Dry Matter Intake, body weight, weight gain and mortality. The study showed there was no difference in percentage of calves that contracted BRD that were retreated or progressed to chronic infection between Baytril 100 and Resflor Gold treatments. However, as the following tables show, there *were* differences observed in mortality rates and subsequent growth.

Study Results

Lower Mortality. More Growth.

It is common for morbidity rates for BRD in stocker calves to range from 40% to 80% of the calves received. Mortality rates in these calves often range from 2% to 10%. Thus, it is prudent for management to find the most efficacious and cost-effective treatment for the animals being received.

In these two trials combined (November/December and January/February), it was shown that the use of Baytril® 100 (enrofloxacin) Injectable for treatment of BRD resulted in fewer mortalities compared to animals treated with Resflor Gold® (florfenicol and flunixin meglumine).

Table 1. Steers diagnosed with BRD out of 102 head in Trial 1 and 100 head in Trial 2 of crossbred steer calves.

Trial 1				
Antibiotic	**n**	**Relapse**	**Chronic**	**Mortality**
Baytril 100	37	21	9	2[a]
Resflor Gold	37	20	11	7[b]
Trial 2				
Antibiotic	**n**	**Relapse**	**Chronic**	**Mortality**
Baytril 100	27	14	8	1
Resflor Gold	31	14	8	2

[a,b] Numbers with different superscripts have a statistically significant difference in value ($P \leq 0.05$)

Performance Indicators from BRD Treatment.

In this study, sick calves treated with Baytril 100 resulted in better antibiotic performance than those sick calves treated with Resflor Gold, as measured by Average Daily Gain, Dry Matter Intake and Overall Weight Gain (shown in **Tables 2–4**). The differences of those steers receiving a single treatment of one of the study antibiotics are statistically significant in many of these measurements — including the ultimate measurement, Overall Weight Gain, where Baytril 100 steers showed a 42% growth differential in both Trials 1 and 2.

Cattle intended for human consumption must not be slaughtered within 28 days from the last treatment.

Table 2. Steers receiving a *single* BRD treatment and the control group – treatment response as measured by growth performance data.

Trial 1				
Variable	**Control Group**	**Baytril 100**	**Resflor Gold**	**P-value**
N	28	15	15	
ADG (lbs)	4.25[a]	3.87[a]	3.01[b]	0.001
Total BW gain (lbs)	186.82[a]	170.57[a]	132.66[b]	0.001
Trial 2				
Variable	**Control Group**	**Baytril 100**	**Resflor Gold**	**P-value**
N	42	13	14	
ADG (lbs)	3.76[a]	3.74[a]	2.88[b]	0.01
Total BW gain (lbs)	168.76[a]	167.93[a]	129.87[b]	0.01

ADG = Average Daily Gain; BW = Body Weight
[a,b] Numbers with different superscripts have a statistically significant difference in value ($P \leq 0.05$).

The Overall Weight Gain of animals receiving a single treatment of Baytril 100 in both trials was greater than the animals receiving Resflor Gold **(Table 2)**. Of the animals receiving two treatments in Trial 1, the Baytril 100 animals gained more than the Resflor Gold animals. Of the animals receiving two treatments in Trial 2, there was no difference in Overall Weight Gain **(Table 3)**.

Table 3. Steers receiving *two* BRD treatments and the control group – treatment response as measured by growth performance data.

Trial 1				
Variable	**Control Group**	**Baytril 100**	**Resflor Gold**	**P-value**
N	28	12	9	
ADG (lbs)	4.25[a]	3.67[a]	2.99[b]	0.003
Total BW gain (lbs)	186.82[a]	162.16[a]	131.85[b]	0.003
Trial 2				
Variable	**Control Group**	**Baytril 100**	**Resflor Gold**	**P-value**
N	42	5	7	
ADG (lbs)	3.76	3.52	3.48	0.61
Total BW gain (lbs)	168.76	158.20	156.42	0.61

ADG = Average Daily Gain; BW = Body Weight
[a,b] Numbers with different superscripts have a statistically significant difference in value ($P \leq 0.05$)

Dry Matter Intake was continually monitored using the GrowSafe Feed Intake System (GrowSafe Systems®). On Day 1 post-treatment in both trials, Dry Matter Intake was significantly greater in the Baytril 100 group. Dry Matter Intake was again greater in the Baytril 100 group on Day 7 in both trials. Only on Day 0, the day the animals became sick and were initially treated, was the Dry Matter Intake greater for animals treated with Resflor Gold® (numerically greater in Trial 1 and significantly greater in Trial 2). This temporary difference in Dry Matter Intake may have been due to the short-term effects of flunixin meglumine on body temperature.

However, unlike Resflor Gold steers, the Baytril 100 steers treated once had Dry Matter Intake comparable to the control steers over a 7-day period post-treatment. This means the Baytril 100 steers performed more closely to the control calves, as measured by Average Daily Gain, Dry Matter Intake and Overall Weight Gain.

Table 4. Dry Matter Intakes between steers receiving *two* BRD treatments.

Trial 1			
	DMI (lbs)		
Study Day	**Baytril 100**	**Resflor Gold**	**P-value**
Day 0 (day of treatment)	10.65± 2.72	14.77± 2.39	0.26
Day 1	17.59± 2.72	9.21± 2.39	0.02
Day 7	18.79± 2.72	16.79± 2.39	0.56
Trial 2			
	DMI (lbs)		
Study Day	**Baytril 100**	**Resflor Gold**	**P-value**
Day 0 (day of treatment)	12.01± 2.67	20.98± 3.04	0.03
Day 1	22.61± 2.67	12.63± 3.04	0.01
Day 7	20.94± 2.67	14.26± 3.04	0.10

Conclusion

Overall, this study shows that sick calves treated once with Baytril 100 for BRD performed more closely to the control calves that were never sick than did sick calves treated with Resflor Gold, as measured by Average Daily Gain, Dry Matter Intake and Overall Weight Gain.

A withdrawal period has not been established for this product in pre-ruminating calves.

Materials and Methods

Randomization

This study utilized a completely randomized design. Two different antibiotics served as treatment individually, with each individual animal serving as an experimental unit.

Study Animals

This study was conducted over two individual 45-day trials. Two naïve groups of steers were purchased for a November/December trial (102 head) in 2011 and a January/February trial (100 head) in 2012. Prior to arrival, steers were randomly allocated to antibiotic treatment groups and treatments were evenly distributed across both trials. Upon arrival, steers were weighed, all identification was removed, gender was confirmed and castration was performed if necessary. Treatment groups and home pens were randomly assigned.

Identification of BRD

Two methods were used to monitor steers daily for symptoms of BRD. First, a visual assessment by a pen checker was employed. Second, Dry Matter Intake intake was tracked to watch for a decrease to less than 50% of the previous day's intake. To eliminate bias in selection of daily pulls, staff making visual assessments were separate from those monitoring the GrowSafe system.

Once all pulls were identified, all cattle were removed from the home pen and worked through the hospital chute. If an animal was marked as a "pull" for the day, it was restrained in the chute and a rectal temperature was collected.

Therapy of BRD

Cattle recording rectal temperatures ≥104°F, with an absence of clinical signs referable to disease in organ systems other than respiratory symptoms, were diagnosed as having BRD. Steers meeting these requirements were treated with their predetermined antibiotic. All steers were returned to their assigned home pen post-treatment. Those animals were not eligible for further treatment for 72 hours.

Analysis of Dry Matter Intake

Analysis of Dry Matter Intake as a percent of body weight and Dry Matter Intake on an individual-day basis did not include all steers which received treatment, as some steers received treatment within the first week of trial or less than seven days before the conclusion of the trial. For steers to be included in the single-treatment data set, steers needed seven days of intake prior to and after treatment. Relapse steers were required to have three days of intake prior to and after both treatments to be included in this portion of the data set.

Statistical Analysis

Statistical analysis was performed using SAS.® Morbidity, relapse, chronic and mortality rates among calves treated with Baytril® 100 (enrofloxacin) Injectable and Resflor Gold® (florfenicol and flunixin meglumine) were compared using a chi-square distribution under PROC FREQ of SAS. Growth performance and feed efficiency data were analyzed using PROC GLM of SAS. Daily intake was analyzed at two different periods, pre- and post-treatment, using repeated measures of PROC MIXED of SAS.

Extra-label use in food-producing animals is prohibited.

Baytril® 100

(enrofloxacin)

100 mg/mL Antimicrobial
Injectable Solution
For Subcutaneous Use In Beef Cattle And Non-Lactating Dairy Cattle
For Intramuscular Or Subcutaneous Use In Swine
Not For Use In Female Dairy Cattle 20 Months Of Age Or Older
Or In Calves To Be Processed For Veal

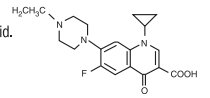
CAUTION:
Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.
Federal (U.S.A.) law prohibits the extra-label use of this drug in food-producing animals.

To assure responsible antimicrobial drug use, enrofloxacin should only be used as a second-line drug for colibacillosis in swine following consideration of other therapeutic options.

PRODUCT DESCRIPTION:
Baytril® 100 is a sterile, ready-to-use injectable antimicrobial solution that contains enrofloxacin, a broad-spectrum fluoroquinolone antimicrobial agent.

Each mL of Baytril® 100 contains 100 mg of enrofloxacin. Excipients are L-arginine base 200 mg, n-butyl alcohol 30 mg, benzyl alcohol (as a preservative) 20 mg and water for injection q.s.

CHEMICAL NOMENCLATURE AND STRUCTURE:
1-cyclopropyl-7-(4-ethyl-1-piperazinyl)-6-fluoro-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid.



INDICATIONS:
Cattle - Single-Dose Therapy: Baytril® 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni* and *Mycoplasma bovis* in beef and non-lactating dairy cattle; and for the control of BRD in beef and non-lactating dairy cattle at high risk of developing BRD associated with *M. haemolytica, P. multocida, H. somni* and *M. bovis*.

Cattle - Multiple-Day Therapy: Baytril® 100 is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica, Pasteurella multocida* and *Histophilus somni* in beef and non-lactating dairy cattle.

Swine: Baytril® 100 is indicated for the treatment and control of swine respiratory disease (SRD) associated with *Actinobacillus pleuropneumoniae, Pasteurella multocida, Haemophilus parasuis, Streptococcus suis, Bordetella bronchiseptica* and *Mycoplasma hyopneumoniae.* Baytril® 100 is indicated for the control of colibacillosis in groups or pens of weaned pigs where colibacillosis associated with *Escherichia coli* has been diagnosed.

DOSAGE AND ADMINISTRATION:
Baytril® 100 provides flexible dosages and durations of therapy.
Baytril® 100 may be administered as a single dose for one day for treatment and control of BRD (cattle), for treatment and control of SRD or for control of colibacillosis (swine), or for multiple days for BRD treatment (cattle). Selection of the appropriate dose and duration of therapy for BRD treatment in cattle should be based on an assessment of the severity of the disease, pathogen susceptibility and clinical response.

Cattle:
Single-Dose Therapy (BRD Treatment): Administer, by subcutaneous injection, a single dose of 7.5-12.5 mg/kg of body weight (3.4-5.7 mL/100 lb).

Multiple-Day Therapy (BRD Treatment): Administer daily, a subcutaneous dose of 2.5-5 mg/kg of body weight (1.1-2.3 mL/100 lb).

Treatment should be repeated at 24-hour intervals for three days. Additional treatments may be given on Days 4 and 5 to animals that have shown clinical improvement but not total recovery.

Single-Dose Therapy (BRD Control): Administer, by subcutaneous injection, a single dose of 7.5 mg/kg of body weight (3.4 mL/100 lb).

Examples of conditions that may contribute to calves being at high risk of developing BRD include, but are not limited to, the following:

- Transportation with animals from two or more farm origins.
- An extended transport time with few to no rest stops.
- An environmental temperature change of ≥30°F during transportation.
- A ≥30°F range in temperature fluctuation within a 24-hour period.
- Exposure to wet or cold weather conditions.
- Excessive shrink (more than would be expected with a normal load of cattle).
- Stressful arrival processing procedures (e.g., castration or dehorning).
- Exposure within the prior 72 hours to animals showing clinical signs of BRD.

Administered dose volume should not exceed 20 mL per injection site.

Table 1 – Baytril® 100 Dose and Treatment Schedule for Cattle*

Weight (lb)	Treatment		Control
	Single-Dose Therapy 7.5 - 12.5 mg/kg Dose Volume (mL)	Multiple-Day Therapy 2.5 - 5.0 mg/kg Dose Volume (mL)	Single-Dose Therapy 7.5 mg/kg Dose Volume (mL)
100	3.5 - 5.5	1.5 - 2.0	3.5
200	7.0 - 11.0	2.5 - 4.5	7.0
300	10.5 - 17.0	3.5 - 6.5	10.5
400	14.0 - 22.5	4.5 - 9.0	14.0
500	17.0 - 28.5	5.5 - 11.5	17.0
600	20.5 - 34.0	7.0 - 13.5	20.5
700	24.0 - 39.5	8.0 - 16.0	24.0
800	27.5 - 45.5	9.0 - 18.0	27.5
900	31.0 - 51.0	10.0 - 20.5	31.0
1000	34.0 - 57.0	11.0 - 23.0	34.0
1100	37.5 - 62.5	12.5 - 25.0	37.5

*Dose volumes have been rounded to the nearest 0.5 mL within the dose range.

Swine:
Administer, either by intramuscular or subcutaneous (behind the ear) injection, a single dose of 7.5 mg/kg of body weight (3.4 mL/100 lb). Administered dose volume should not exceed 5 mL per injection site.
For the control of colibacillosis, administration should be initiated within the first 60 days post-weaning when clinical signs are present in at least 2% of the animals in the group. If no improvement is noted within 48 hours, the diagnosis should be reevaluated.

Table 2 – Baytril® 100 Dose Schedule for Swine

Weight (lb)	Dose Volume (mL)
15	0.5
30	1.0
50	1.7
100	3.4
150	5.1
200	6.8
250	8.5

Dilution of Baytril® 100: Baytril® 100 may be diluted with sterile water prior to injection. The diluted product should be used within 24 hours. Store diluted solution in amber glass bottles between 4-40°C (36-104°F).

Table 3 – Dilution Schedule*

Swine Weight	mL of Baytril® 100	mL of sterile water	Number of doses
10 lb	34 mL	66 mL	100
15 lb	51 mL	49 mL	100
20 lb	68 mL	32 mL	100
25 lb	85 mL	15 mL	100

*For 1 mL dose volume from diluted solution

RESIDUE WARNINGS:
Cattle: Animals intended for human consumption must not be slaughtered within 28 days from the last treatment. This product is not approved for female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in calves to be processed for veal. **Swine:** Animals intended for human consumption must not be slaughtered within 5 days of receiving a single-injection dose.

HUMAN WARNINGS:
Not for use in humans. Keep out of reach of children. Avoid contact with eyes. In case of contact, immediately flush eyes with copious amounts of water for 15 minutes. In case of dermal contact, wash skin with soap and water. Consult a physician if irritation persists following ocular or dermal exposures. Individuals with a history of hypersensitivity to quinolones should avoid this product. In humans, there is a risk of user photosensitization within a few hours after excessive exposure to quinolones. If excessive accidental exposure occurs, avoid direct sunlight. For customer service or to obtain product information, including a Safety Data Sheet, call 1-800-633-3796. For medical emergencies or to report adverse reactions, call 1-800-422-9874.

PRECAUTIONS:
The effects of enrofloxacin on cattle or swine reproductive performance, pregnancy and lactation have not been adequately determined. The long-term effects on articular joint cartilage have not been determined in pigs above market weight.

Subcutaneous injection in cattle and swine, or intramuscular injection in swine, can cause a transient local tissue reaction that may result in trim loss of edible tissue at slaughter.

Baytril® 100 contains different excipients than other Baytril® products. The safety and efficacy of this formulation in species other than cattle and swine have not been determined.

Quinolone-class drugs should be used with caution in animals with known or suspected Central Nervous System (CNS) disorders. In such animals, quinolones have, in rare instances, been associated with CNS stimulation which may lead to convulsive seizures. Quinolone-class drugs have been shown to produce erosions of cartilage of weight-bearing joints and other signs of arthropathy in immature animals of various species. See Animal Safety section for additional information.

ADVERSE REACTIONS:
No adverse reactions were observed during clinical trials.

For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth.

MICROBIOLOGY:
Enrofloxacin is bactericidal and exerts its antibacterial effect by inhibiting bacterial DNA gyrase (a type II topoisomerase) thereby preventing DNA supercoiling and replication which leads to cell death.[1] Enrofloxacin is active against Gram-negative and Gram-positive bacteria.

EFFECTIVENESS:
Cattle: A total of 845 calves with naturally-occurring BRD were treated with Baytril® 100 in eight field trials located in five cattle-feeding states. Response to treatment was compared to non-treated controls. Single-dose and multiple-day therapy regimens were evaluated. BRD and mortality were significantly reduced in enrofloxacin-treated calves. No adverse reactions were reported in treated animals.

The effectiveness of Baytril® 100 for the control of respiratory disease in cattle at high risk of developing BRD was evaluated in a six-location study in the U.S. and Canada. A total of 1,150 crossbred beef calves at high risk of developing BRD were enrolled in the study. Baytril® 100 (7.5 mg/kg BW) or an equivalent volume of sterile saline was administered as a single subcutaneous injection within two days after arrival. Cattle were observed daily for clinical signs of BRD and were evaluated for success on Day 14 post-treatment. Treatment success in the Baytril® 100 group (497/573, 87.83%) was significantly higher ($P = 0.0013$) than success in the saline control group (455/571, 80.92%). In addition, there were more treatment successes (n = 13) than failures (n = 3) in the group of animals positive for *M. bovis* on Day 0 that were treated with Baytril® 100. No product-related adverse reactions were reported.

Swine: A total of 590 pigs were treated with Baytril® 100 or saline in two separate natural infection SRD field trials. For the treatment of SRD, the success rate of enrofloxacin-treated pigs that were defined as "sick and febrile" (increased respiratory rate, labored or dyspneic breathing, depressed attitude and a rectal temperature ≥ 104°F) was statistically significantly greater than the success rate of saline-treated "sick and febrile" pigs. For the control of SRD, mean rectal temperature, mortality (one trial) and morbidity were statistically significantly lower for enrofloxacin-treated pigs in pens containing a percentage of "sick and febrile" pigs compared to saline-treated pigs.

The effectiveness of Baytril® 100 administered as a single SC dose of 7.5 mg/kg BW for the treatment and control of SRD associated with *M. hyopneumoniae* was demonstrated using an induced infection model study and three single-site natural infection field studies. In the model study, 72 healthy pigs were challenged with a representative *M. hyopneumoniae* isolate and treated with Baytril® 100 or saline. A statistically significant ($P < 0.0001$) decrease in the mean total lung lesion score was observed in the Baytril® 100-treated group (4%) compared with the saline-treated group (27%) at 10 days post-treatment. In two field studies evaluating effectiveness for treatment of SRD, a total of 300 pigs with clinical signs of SRD (moderate depression, moderately increased respiratory rate, and a rectal temperature of ≥ 104°F) were enrolled and treated with Baytril® 100 or saline. At 7 days post-treatment, the cure rate was statistically significantly higher at each site ($P < 0.0001$) in the Baytril® 100-treated groups (61.3% and 92%) compared with the saline-treated groups (26.7% and 33.3%). In one field study evaluating effectiveness for control of SRD, a group of 400 pigs in which > 15% had clinical signs of SRD (moderate depression score, moderately increased respiratory rate, and a rectal temperature of ≥ 104°F) was enrolled and treated with Baytril® 100 or saline. At 7 days post-treatment, the cure rate was statistically significantly higher ($P < 0.0002$) in the Baytril® 100-treated group (70.0%) compared with the saline-treated group (48.5%). In addition to *M. hyopneumoniae, B. bronchiseptica* was also isolated in sufficient numbers from these field studies to be included in the SRD treatment and control indications.

The effectiveness of Baytril® 100 for the control of colibacillosis associated with *E. coli* was evaluated in a multi-site natural infection field study. At each site, when at least 5% of the pigs were defined as "clinically affected" (presence of diarrhea and either depression or gauntness), all pigs were administered Baytril® 100 as a single IM dose of 7.5 mg/kg BW or an equivalent dose volume of saline. At 7 days post-treatment, the success rate was statistically significantly higher ($P = 0.0350$) in the Baytril® 100-treated group (61.5%) compared with the saline-treated group (44.7%).

The effectiveness of Baytril® 100 administered as a single IM dose of 7.5 mg/kg BW for the treatment and control of SRD or asa single SC dose of 7.5 mg/kg BW for the control of colibacillosis was confirmed by demonstrating comparable serum enrofloxacin concentrations following IM or SC injection into the neck of healthy male and female pigs.

TOXICOLOGY:
The oral LD50 for laboratory rats was greater than 5000 mg/kg of body weight. Ninety-day feeding studies in dogs and rats revealed no observable adverse effects at treatment rates of 3 and 40 mg/kg respectively. Chronic studies in rats and mice revealed no observable adverse effects at 5.3 and 323 mg/kg respectively. There was no evidence of carcinogenic effect in laboratory animal models. A two-generation rat reproduction study revealed no effect with 10 mg/kg treatments. No teratogenic effects were observed in rabbits at doses of 25 mg/kg or in rats at 50 mg/kg.

ANIMAL SAFETY:
Cattle: Safety studies were conducted in feeder calves using single doses of 5, 15 and 25 mg/kg for 15 consecutive days and 50 mg/kg for 5 consecutive days. No clinical signs of toxicity were observed when a dose of 5 mg/kg was administered for 15 days. Clinical signs of depression, incoordination and muscle fasciculation were observed in calves when doses of 15 or 25 mg/kg were administered for 10 to 15 days. Clinical signs of depression, inappetance and incoordination were observed when a dose of 50 mg/kg was administered for 3 days. No drug-related abnormalities in clinical pathology parameters were identified. No articular cartilage lesions were observed after examination of stifle joints from animals administered 25 mg/kg for 15 days.

A safety study was conducted in 23-day-old calves using doses of 5, 15 and 25 mg/kg for 15 consecutive days. No clinical signs of toxicity or changes in clinical pathology parameters were observed. No articular cartilage lesions were observed in the stifle joints at any dose level at 2 days and 9 days following 15 days of drug administration.

An injection site study conducted in feeder calves demonstrated that the formulation may induce a transient reaction in the subcutaneous tissue and underlying muscle. No painful responses to administration were observed.

Swine: Subcutaneous Safety: A safety study was conducted in 32 pigs weighing approximately 57 kg (125 lb) using single doses of 5, 15 or 25 mg/kg daily for 15 consecutive days. Incidental lameness of short duration was observed in all groups, including the saline-treated controls. Musculoskeletal stiffness was observed following the 15 and 25 mg/kg treatments with clinical signs appearing during the second week of treatment. Clinical signs of lameness improved after treatment ceased and most animals were clinically normal at necropsy.

A second study was conducted in two pigs weighing approximately 23 kg (50 lb), treated with 50 mg/kg for 5 consecutive days. There were no clinical signs of toxicity or pathological changes.

An injection site study conducted in pigs demonstrated that the formulation may induce a transient reaction in the subcutaneous tissue. No painful responses to administration were observed.

Intramuscular Safety: A safety study was conducted in 48 weaned, 20- to 22-day-old pigs. Pigs were administered Baytril® 100, at 7.5, 22.5 and 37.5 mg/kg BW by IM injection into the neck once weekly for 3 consecutive weeks. All pigs remained clinically normal throughout the study. Transient decreases in feed and water consumption were observed after each treatment. Mild, transient, post-treatment injection site swellings were observed in pigs receiving the 37.5 mg/kg BW dose. Injection site inflammation was found on post-mortem examination in all enrofloxacin-treated groups.

STORAGE CONDITIONS: Protect from direct sunlight. Do not refrigerate or freeze. Store at 20-30°C (68-86°F), excursions permitted up to 40°C (104°F). Precipitation may occur due to cold temperature. To redissolve, warm and then shake the vial.

HOW SUPPLIED:
Baytril® 100:

Code: 08711170-023699	100 mg/mL	100 mL Bottle
Code: 08711278-032199	100 mg/mL	250 mL Bottle
Code: 80456115	100 mg/mL	500 mL Bottle

REFERENCES:
1. Hooper, D. C., Wolfson, J. S., Quinolone Antimicrobial Agents, 2nd ed, 59 - 75, 1993.

U.S. Patent No. 5,756,506

For customer service or to obtain product information, including a Safety Data Sheet, call 1-800-633-3796. October 2014
For medical emergencies or to report adverse reactions, call 1-800-422-9874. 80908653, R.5

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