

Performance of preweaned Holstein calves with bovine respiratory disease treated with either Resflor Gold or Baytril

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Introduction

The Land O' Lakes (LOL) Research facility located in Webster City, IA receives 255-260 Holstein bull calves every 2 months from a contract buyer in Wisconsin. The majority of the calves are 4 to 8 days old at arrival. The facility started operations in 1974, and LOL has conducted nutritional studies on over 50,000 calves since it opened. During the past 15 years, *Mycoplasma bovis* has reduced both the value and number of saleable calves, primarily because of otitis media and bovine respiratory disease (BRD). A study was initiated to determine milk replacer and calf starter intake, weight gain, feed efficiency, treatment costs, and performance of calves treated for BRD with either Resflor Gold or Baytril, compared with those for calves that were not treated for BRD.

Materials and Methods

Four hundred and sixty-three Holstein bull calves were enrolled in the trial. A blood sample was obtained from the jugular vein of each calf upon arrival at the facility. Serum immunoglobulin concentration was determined by use of the zinc sulfate turbidity method, and calves were assigned an IgG score on the basis of the zinc sulfate turbidity results. Whole blood samples were tested for the presence of bovine viral diarrhea virus (BVDV) to rule out persistent infection. Calves were monitored by LOL staff, and those with BRD had their respiratory rate recorded and a respiratory score assigned in accordance with methods developed by Dr. Sheila McGuirk at the University of Wisconsin. Calves with a respiratory score ≥ 4 had a deep nasal-pharyngeal swab (DNP) specimen obtained before initiation of antimicrobial administration. Each DNP swab specimen was placed in transport media and shipped overnight to the Wisconsin Veterinary Diagnostic Laboratory, where the specimens were tested for bovine respiratory syncytial virus (BRSV), BVDV, infectious bovine rhinotracheitis virus (IBRV), and bovine coronavirus (BoCV) by means of multiplex real-time PCR assay, and cultured for *Mycoplasma*. Suspect *Mycoplasma* colonies were speciated by the colony immunoblot method. Calves with BRD

were randomly assigned to receive either Resflor Gold (a combination of florfenicol [18.2 mg/lb; 40 mg/kg] and flunixin meglumine [1 mg/lb; 2.3 mg/kg] SC) or Baytril (enrofloxacin [5.7 mg/lb; 12.5 mg/kg] SC). Seventy-two hours after antimicrobial administration, calves were re-evaluated and those not clinically normal were administered a second dose of the same antimicrobial. Total weight gain, calf starter and milk replacer intake on a dry matter basis, treatment costs, feed-to-gain ratios, and first-treatment success rate were evaluated for each treatment group. Additionally, performance of calves treated for BRD was compared with that for calves not treated for BRD.

Results

None of the calves were identified as persistently infected with BVDV. A total of 212 DNP swab specimens (Resflor Gold group, n=113; Baytril group, n=99) were tested from calves with BRD. The number of respiratory pathogens identified did not differ between the 2 treatment groups, and the most frequently identified respiratory pathogens were *Mycoplasma bovis* (77.8%) and BoCV (68.4%). Prior to antimicrobial administration, the respiratory rate, total respiratory score and rectal temperature did not differ between calves treated with Resflor Gold or Baytril. The first-treatment success rate for calves treated with Resflor Gold (50.4%) was significantly ($P<0.01$) greater than that for calves treated with Baytril (33.3%). Performance data was available for 463 calves, of which 104 were treated with Resflor Gold, 110 were treated with Baytril, and 249 were not treated for BRD. Fecal score, electrolyte, and antimicrobial drug costs did not differ significantly between the Resflor Gold and Baytril treatment groups. Calves treated with Resflor Gold had a significantly ($P<0.02$) lower serum IgG concentration than did calves not treated for BRD. At weaning, calves that were not treated for BRD had higher calf starter intake (29.7 lb vs 23.1 lb [13.5 kg vs 10.5 kg], $P<0.01$), a better feed-to-gain ratio (2.08 vs 2.42, $P<0.01$), and weighed more (147.2 lb vs 140.4 lb [66.9 kg vs 63.8 kg], $P<0.01$) than did calves treated for BRD. However, milk replacer intake did not differ between calves treated for BRD and calves not treated for BRD.

Significance

Results indicated that preweaned dairy calves with BRD had decreased performance, compared with preweaned dairy calves without BRD. Calves treated for BRD had lower weight gain, poorer feed efficiency, and less calf starter intake than did calves that were not treated for BRD. Milk replacer intake did not differ between calves with and without BRD, which suggests that many calves with BRD do not have an appreciable decline in milk replacer intake; therefore, a reduction in milk replacer intake is not a reliable indicator of calves with BRD, particularly when they are not fed a high amount of milk replacer. Calf operations should focus on reducing the risk of calves contracting BRD, and an important aspect of BRD control is making sure

that newborn calves receive a sufficient quantity of good-quality colostrum within a few hours after birth. Results of this study and others have indicated the beneficial impact of colostrum intake on reducing the incidence of BRD. The first treatment success rate for treatment with Resflor Gold (50.4%) was significantly higher than that for Baytril (33.3%). The difference in first treatment success rate may have been due to the anti-inflammatory component (flunixin meglumine) of Resflor Gold; the inflammatory response caused by BRD has a deleterious effect on the health and well-being of cattle suffering from BRD. Although not statistically significant ($P=0.07$), calves treated with Resflor Gold tended to have a better feed-to-gain ratio than did calves that were treated with Baytril.