group differences were assessed by using chi-square analysis for bacteriological cure and ANOVA to evaluate linear score differences before and after treatment.

Results and Discussion

For the bacteriological analysis, only 83 cows were used because 24 animals were negative for *S. aureus* at the drying-off sampling (22.4%). The negative results at drying-off could be related to spontaneous cure, lactation therapy or false negative results. The percentage of bacteriological cure was significantly higher for group 3P+N (68%) than for group N (32%) ($p<0.05$). There was no difference in the cure rate across lactation groups (1, 2 and >3).

The higher cure percentage of group 3P+N can be explained by the higher level of antibiotic in the mammary tissues, the efficacy of pirlimycin and the combination of different products.

The average L2S for the 3 milk samples before treatment was 4.45 for group N and 4.58 for group 3P+N ; average L2S for the 3 milk samples after calving was 3.37 for the group N and 3.49 for the group 3P+N. We did not find any significant difference between the 2 treatments for the difference in L2S (after-before treatment); mean differences were –1.0588 and –1.1396 for N and 3P+N, respectively ($p=0.86$). Treatment 3P+N had positive impact on bacteriological cure but did not provide any improvement on L2S when compared to N.

Impact of Treatment with Monensin Controlled-release Capsule on Blood Biochemical Constituents

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Materials and Methods

In the context of a large, post-approval randomized clinical trial on Rumensin CRC®, blood samples were collected to determine the impact of treatment on different blood constituents of lactating dairy cows. This study was performed on 730 cows from 38 Quebec herds. Cows were randomly assigned to receive a Rumensin CRC capsule (n=354) or a placebo capsule (n=376) between two and four weeks before the expected calving date. Two blood samples were taken for each cow: once between two and four weeks postpartum and again between six and eight weeks postpartum. Blood analyses were performed on serum for the following biochemical constituents: glucose, urea, total protein, albumin, GGT, AST, potassium, inorganic phosphorus, calcium, Na, Cl, total CO2, Mg, cholesterol and ß-hydroxybutyrate (BHB).

Herd means for serum BHB were calculated from the first blood samples taken from the placebo cows. Those means were ranked, and three groups of risk for ketosis were created based on quartiles. For the low-risk-for-ketosis (LRK) herds, herd BHB mean was in the first quartile; for the medium-risk-for-ketosis (MRK) herds, between the first and third quartile; and for the high-risk-for-ketosis (HRK) herds, in the fourth quartile. A linear mixed-effect model (proc mixed in SAS) was applied to assess the effect of treatment on each biochemical constituent. Herd was entered in all models as a random variable and the following variables were included in the models to control for their fixed effects: treatment, biochemistry number, herd risk for ketosis, cow's level of production, herd's level of production, type of feeding, group of lactation and body condition. Interactions of each fixed variable with treatment were also verified. Tests for BHB were performed on log transformation.

Results

Serum glucose tended to be increased with treatment ($p=0.13$). Interaction between herd risk for ketosis and treatment was significant ($p=0.04$). Effect of treatment was more important on cows in HRK herds. Serum urea was also increased by Rumensin CRC ($P=0.001$). Interaction between treatment and type of feeding was significant ($p=0.02$). The rise in serum urea with treatment was of greater amplitude in cows fed concentrates distributed by robot than for cows fed a

component feeding program distributed manually or a total mixed ration (TMR). Treatment reduced significantly logBHB concentration ($p<0.001$). Interaction between treatment and biochemistry number was significant ($p=0.03$). The fall on logBHB concentration with treatment was more pronounced at the first biochemistry evaluation. Interaction between treatment and risk for ketosis was also significant ($p=0.01$) in the later model. Cows in HRK and MRK herds had an important decrease of logBHB concentration with treatment, but no effect was found for cows in LRK. GGT was lowered with the use of Rumensin CRC ($p=0.01$).

Conclusions

Treatment with the monensin controlled-release capsule significantly affects the energy-related blood constituents, and these effects are more pronounced in the HRK herds. All other blood constituents were unaffected by Rumensin CRC treatment. The results of this study are in accordance with findings from the Rumensin CRC pre-approval study published by Duffield *et al* in 1998.

Daily Gain and Incidence of Scours in Holstein Calves fed Milk Replacers Supplemented with Antibiotics or Enteroguard®

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Introduction

To control infection by enteric pathogens in preweaned calves, antibiotics, oligosaccharides, or probiotics are often included in milk replacers.

Materials and Methods

Forty-five Holstein calves were used to compare the effects of milk replacers containing either antibiotics (oxytetracycline at 138 mg/kg (62.7mg/lb) and 276 mg/kg, (125 mg/lb) (MRA), n = 22) or a blend of fructooligosaccharides, allicin, and probiotics (Enteroguard®, MRE, n = 23) on daily gain and incidence of scours of Holstein calves. Milk replacers were fed at 0.23 kg (0.5 lb) twice daily. All calves received 2.84L of colostrum within 2 hours of birth and 12 hours later.

Results and Discussion

Mean immunoglobulin content of the colostrum as determined by specific gravity was 55 mg/ml and was not different (P = 0.86) between treatments. Starter grain mix was fed for ad libitum consumption from 21 to 35 days of age. There were no differences between starter intakes (mean = 0.22 kg (0.48 lb) /d, P = 0.29) or mean body weight (0.17 (0.37 lb) vs. 0.14 kg (0.31 lb)/d for MRA and MRE, respectively, P = 0.47). Gain of calves fed MRA tended to be less than that of claves fed MRE during Week 2 (0.07 (0.15 lb) vs. 0.09 kg (0.20 lb) /d) and greater during Week 5 (0.62 (1.36 lb) vs. 0.51 kg (1.12 lb) d, P = 0.09 for treatment by week interaction). Total gain for calves fed MRE was no different from gain for calves fed MRA (P= 0.53). Likewise, feed efficiencies (gain/dry matter intake) were not different (P = 0.80); but feed efficiency tended to be lower in calves fed MRA during Week 2 than for calves fed MRE and greater during Week 5 (P = 0.06 for treatment by week interaction). Severity of scours as measured by fecal scores was not different between MRA and MRE (1.8 (4.0 lb) vs. 1.9 kg (4.2 lb) /d, P = 0.92). Serum proteins, an indirect measure of immunoglobulins, were similar for MRA and MRE (5.4 vs. 5.3 mg/dl, P = 0.21).

Conclusion

Overall performance, as measured by weight gain, feed efficiency, and incidence of scours of calves fed milk replacer containing Enteroguard® was equal to that of calves fed milk replacer containing antibiotics.