

Effect of colostrum replacer supplementation of milk replacer on the risk of antibiotic treatment and performance of pre-weaned dairy calves

M. F. Chamorro, DVM, MS, PhD, DACVIM¹; D.M. Haines, DVM, MS, PhD²

¹Clinical Research and Technical Services, Saskatoon Colostrum Company Ltd. Saskatoon, S7K 6A2 Canada

²Department of Veterinary Microbiology, Western College of Veterinary Medicine, Saskatoon, SK, S7N 5B4, Canada

Introduction

Concerns over the risks of emergence of antibiotic-resistant bacteria due to excessive antibiotic use in food producing animals has led to increased restrictions of their use to treat and prevent common infectious diseases. Additionally, the absence of discovery and development of new antibiotics has prompted efforts to develop alternatives to antimicrobial use. Daily supplementation of milk replacer with immunoglobulins and immune factors from colostrum replacers could be an alternative prophylactic measure to decrease antibiotic usage in young dairy calves. The objective of this study was to evaluate the effect of colostrum supplementation of milk replacer on the risk of antibiotic treatment and weight gain of pre-weaned dairy calves.

Materials and Methods

Two hundred three heifer dairy calves of approximately 1 d of age that received colostrum at their farms of origin were randomly assigned to 1 of 2 treatment diets after arrival to a commercial dairy calf rearing facility. Group 1 (n=101) received 454 g of commercial milk replacer mixed with 3 L of water twice daily. Group 2 (n=102) received 32 g of supplemental IgG in their milk replacer (304 g of commercial milk replacer mixed with 3 L of water twice daily) in the form of 150 g of colostrum replacer powder twice daily for the first 14 days of life. All calves received the same starter ration and had free access to water during the entire study. Serum IgG levels were evaluated in all calves at arrival before treatment administration (d 0). Daily health evaluations and antibiotic treatments were recorded until weaning day (d 56) by personnel blinded to treatment group assignment. Individual

body weights were recorded in all calves at d 0, 14, and 56. Data obtained from study calves were compared between treatment groups using the PROC TTEST and PROC FREQ functions of SAS. The relative risk of antibiotic treatment before weaning was estimated among treatment groups.

Results

Serum IgG levels at arrival were similar among treatment groups (group 1=24.6 g/L vs. group 2=25.2 g/L). The mean body weight at weaning was similar for calves in group 1 (77.3 kg) compared with calves in group 2 (79.6 kg). The mean average daily gain from arrival to weaning was similar among calves from group 1 (0.7 kg) compared with calves from group 2 (0.7 kg). A higher proportion of calves in group 1 was treated with antibiotics before weaning (group 1=70.3% vs. group 2=21.57%; $P < 0.001$). Calves from group 1 were 8.6 times more likely to become treated with antibiotics before weaning compared with calves from group 2. The mean number of antibiotic treatments per calf before weaning was significantly higher in group 1 calves compared with group 2 calves (1.4 vs. 0.3, respectively, $P < 0.001$).

Significance

Colostrum replacer supplementation of milk replacer reduced antibiotic treatment in pre-weaned dairy calves independently of passive transfer status. The results from this study indicate that supplementing dairy calves with colostrum replacer during the first 14 days of life could be an alternative to reduce antibiotic treatment during the pre-weaning period.