

# Effects of Two-Week Oral IGG Supplementation in Pre-Weaned Calves on Morbidity, Mortality, and Weight Gain

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## Introduction

Because of growing concern over antimicrobial resistance, alternatives to antimicrobial use in animal production are needed. One potential way to reduce treatment is to provide improved caloric and IgG supplementation in the neonatal period. The objectives of this study were to determine the effect of 14 days of an oral dehydrated colostrum supplement added to milk-replacer for pre-weaned calves on calf morbidity and treatments, mortality, feed intake and weight gain.

## Materials and Methods

Ninety one-day-old calves on each of two commercial calf ranches were randomly allocated to one of three groups and followed for 28 days. Control calves received a medicated milk replacer twice daily and were housed in individual hutches. The treatment group received 70 grams of colostrum powder (Calves Choice Total Bronze, Saskatoon Colostrum Co, 10 gms of IgG) in the same milk replacer twice daily for 14 days. The placebo group received an equivalent nutritional supplementation (matched on protein and fat percent to the colostrum) without IgG for 14 days. Daily health evaluations were performed by personnel blinded to treatment for signs of morbidity (fecal scores, respiratory signs, attitude). Treatments were based on the health assessment, temperature and protocols of the calf ranch. Calves were

weighed on day 1, 28 and 60. Serum was collected day 1, 2 and 7 for serum IgG determination. Feed consumption (milk and grain) was recorded.

## Results

For Calf Ranch #1, an ANOVA model revealed that calf diarrhea incidence was associated with low serum IgG levels, low incoming weight and not receiving supplemental IgG in the feed. Grain consumption and weight gain was significantly greater in calves receiving the colostrum or placebo supplement. Weight gain at day 60 was significantly higher in the colostrum supplemented group compared to the placebo and control groups. There were no differences in mortality or respiratory disease incidence among groups. For Calf Ranch #2, average days of diarrhea was significantly greater in the placebo group compared to the colostrum supplemented group ( $P=0.002$ ). However, the single most important determinant of morbidity and mortality in these trials was serum IgG levels  $>1000$  mg/dl on day 2.

## Significance

This study indicates that supplemental IgG for the first two weeks of life can improve the health of neonatal calves and reduce treatments, but adequate passive transfer is still the most important measured factor associated with calf health.