

Effect of Calcium Propionate plus Propylene Glycol on the incidence of Calving-related Disorders in Transition Florida Dairy Cows fed Anionic Salts

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Introduction

Transition period in the dairy cow is characterized by tremendous physiological demands. Calving-related disorders (CRD) such as milk fever (MF), retained fetal membranes (RFM), metritis, fatty liver, ketosis, left and right displacement of abomasum (DA), mastitis, and lameness are common features. These disorders are interrelated and have a significant negative economic impact in dairy cattle operations. Any attempt to decrease the incidence of CRD will positively affect milk yield and reproductive performance.

The following field trial was conducted to determine the effect of a calcium-energy supplement on the incidence of calving-related disorders in Florida dairy cows.

Materials and Methods

The study was carried out on a dairy farm with 3600 milking cows located in north central Florida. Milk rolling herd average was 10,500 kg of milk /cow/year (23,100 lb). Most cows were housed in a dry-lot system and fed a Total Mixed Ration (TMR). Transition cows received a diet higher in effective NDF and the pre-calving group received anionic salts (Dietary Cation-Anion Difference-20 mEq/kg Dry Matter) (DCAD -20 mEq/kg DM). Cows that calved during October to December 1997 were totaling 479, were selected at random and allocated to 3 different experimental protocols as follows: treatment Group 1-160 cows receiving no treatment at parturition; Group 2-158 cows receiving 51 g of calcium

orally as calcium chloride, group 3-161 cows receiving 400 g of calcium propionate (100 g Ca) plus 400 g of propylene glycol, orally.

Treatments were administered at calving while processing the fresh cows, within 12 hours after parturition. Cows were followed up during the entire lactation. Outcome variables were incidence of MF, RFM, metritis, ketosis, and DA according to farm veterinarian definitions. Outcome variables were analyzed using logistic regression models. Variables included in the final models were decided according to biological importance and as a potential confounder. To determine the degree of association among variables, odds ratio and 95% confidence intervals were also calculated. Goodness-of-fit of the different models was performed using the Hosmer-LemeshowTM statistic.

Conclusions

It was concluded that calcium supplement and calcium-energy supplement in cows receiving anionic salts in the prepartum period did not affect incidence of MF, RFM, metritis, DA and ketosis. The interrelationships among CRD are complex, and many other factors or potential confounders could not be analyzed. Incidence of MF was low, and ketosis and DA were similar to other reports. However, incidence of RFM and metritis were extremely high and may be normal under Florida conditions. The sample size, relative to incidence of some CRD, may have reduced the ability to detect differences attributable to treatments.