

Effects of Prepartum Supplemental Fat Types on Cow Performance and Passive Transfer of Immunity to Neonatal Calves

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Introduction

Prepartum fat supplementation has been shown to have effects on immune function of dairy cows and reproductive function of dairy and beef cows. The objective of this study was to look at the effect of prepartum fat supplementation on immune function and transfer of innate immunity in calves of cows supplemented prepartum and their subsequent production.

Materials and Methods

For this trial thirty-six British cross multiparous cows (age 5 to 11 years, mean body condition score (BCS) 5.7, body weight 1276 lb (580kg) were randomly assigned to one of three treatments: a corn soybean meal control (CON); full fat extruded soybean meal (FF); or MegalacTM and soybean meal (MEG) supplement. Diets were formulated to be isonitrogenous and isocaloric MEG and FF were formulated to provide 5% of DMI as fat. Supplements were fed for 50 d prepartum and animals were allowed to graze on a common pasture with standing dormant forage. Blood samples were taken at the onset of supplementation and approximately two weeks prior to calving (d 36) for complete blood counts (CBC), total immunoglobulin (Ig) G, and tetanus toxin titer. Calves were bled within 24 hrs of parturition, again at 21d of age and 42 d of age. Samples were taken for CBC, total IgG concentrations, and tetanus toxin titers. Cow weight and BCS were obtained at d 0 and 36 of supplementa-

tion. Calf birth weight, calving ease, calf vigor scores, and 100 d weight were also obtained.

Results

There were no differences in BCS (P=0.43), cow weight (P=0.44), calving ease (P=0.99), calf vigor (P=0.99), calf weight change (P=0.45) nor weight change per day of age (P= 0.97). There were no differences in the cow CBC's (P>0.05) due to supplements nor were there differences in conception rates to timed insemination (P=0.66). WBC were increased in MEG calves (P=0.04), possibly caused by an increase in lymphocytes (P=0.03) and numeric increases in band cells, monocytes, and eosinophils (P=0.11, 0.18, and 0.19 respectively). Treatment differences in calf total IgG concentrations (P=0.29) or tetanus toxin titers (P=0.52) for pooled means across time did not exist. There were no treatment differences in cow IgG concentrations (P=0.29) or tetanus toxin titers (P=0.69).

Significance

Type of fat supplemented to prepartum cows had little affect on the cows or calves in this study. Fat supplementation can be a costly component to wintering cows. This data can be helpful for veterinarians, nutritionists and producers when considering which type of fat source is most economical with little impact on cow or calf performance and health.