Serum Immunoglobulin G Concentrations in *in-vitro* Fertilized Calves Delivered by Cesarean Section

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Objective

The objective of this study was to evaluate colostral IgG absorption as an indicator of passive transfer of immunity in in-virtro fertilized (IVF) calves delivered by cesarean section.

Materials and Methods

Fifty three beef-cross cows pregnant with Holstein-cross calves derived by IVF procedures were induced with dexathemasone and elective Cesarean sections performed between days 275-280 of gestation. Twenty control Holstein calves were delivered by natural birth. All calves were separated from dams at birth and were fed 2 liters of colostrum at 0, 6, 12 and 24 hours of age. IVF calves were fed colostrum from their respective dams or pooled colostrum in descending order of priority. Colostrum was sampled at each feeding period and frozen at -20C until analysis. Control calves were fed pooled colostrum. Blood was obtained by jugular venipuncture at 0, 12, and 24 hours after birth. Blood was allowed to clot at room temperature. Serum was harvested until centrifugation and was stored at -20C until analysis. Immunoglobulin concentration in serum and colostrum was determined by radial immunodiffusion.

Results

Immunoglobulin G concentrations of colostrum given were higher at 0 ($P<0.06$), 6 ($P<0.001$), and 12 ($P<0.001$) hours for IVF calves as compared to control calves. Likewise, serum IgG concentrations were higher in IVF calves than control calves at 12 ($P<0.003$) and 24 ($P<0.001$) hours. Colostral absorption was estimated by linear regression. Slope and regression coefficients were similar for both groups of calves.

Conclusions

Absorption of colostral immunoglobulins in IVF calves delivered by Cesarean section as monitored by serum IgG was determined to be similar to calves delivered by natural birth. We hypothesize that the higher concentrations of colostral and serum IgG in the IVF calves delivered by Cesarean section were associated with the use of colostrum from the dam, whereas control calves were only given pooled colostrum.