

# Activity of Gamma Glutamyl Transferase in Serum of Newborn and Day-old Calves Derived by *in-vitro* Fertilization

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## Objective

The objective of the study was to determine the activity of gamma glutamyl transferase (GGT) in serum of control calves and calves derived by in-vitro fertilization (IVF) procedures.

## Materials and Methods

Fifty-three Holstein-cross calves derived by IVF procedures were delivered by elective Caesarean section at 275-280 days of gestation. Twenty Holstein calves (controls) were delivered by natural birth. Calves were separated from their dams at birth and fed 2 liters of colostrum at 0, 6, 12 and 24 hours after birth. Calves derived by IVF procedures were fed colostrum from their dams, colostrum from other dams or pooled colostrum, in descending order of priority. Control calves were fed pooled colostrum. Samples of serum were obtained from calves by jugular veinipuncture at 0, 12 and 24 hours after birth. The samples were frozen at -20 C until the activity of GGT was determined by automated chemical analysis (Vitros; Johnson and Johnson, Rochester, NY 14626).

## Results

The mean activity of GGT in IVF calves at birth was 20.0 U/l (standard deviation, 6.6 U/l) and the mean

activity of GGT in IVF calves at 24 hours after birth was 5,819 U/l (standard deviation, 2,818 U/l). The mean activity of GGT in control calves at birth was 24.9 U/l (standard deviation, 7.97 U/l) and the mean activity of GGT in control calves at 24 hours after birth was 2,426 U/l (standard deviation, 2,197 U/l). Samples of serum from calves derived by IVF procedures at 24 hours after birth had a higher mean activity of GGT ( $P < 0.0001$ ) compared to samples of serum from control calves at 24 hours after birth.

## Conclusions

The mean activity of GGT in samples of serum from control calves and calves derived by IVF procedures increased between birth and 24 hours after birth. The mean activity of GGT in samples of serum from calves derived by IVF procedures at 24 hours after birth significantly exceeded the mean activity of GGT in samples of serum from control calves at 24 hours after birth. We suspected that colostrum fed to calves derived by IVF procedures had a higher activity of GGT compared to colostrum fed to control calves as the concentration of immunoglobulin G in colostrum fed to calves derived by IVF procedures exceeded the concentration of immunoglobulin G in colostrum fed to control calves (T.L. Bailey, W. D. Whittier, J. M. Murphy, *et al.* Serum immunoglobulin G concentrations in *in-vitro* fertilized calves derived by cesarian section. *Am Assoc Bovine Pract*, 1998).