Evaluation of Synthetic Colostrum Supplement on Performance, Health and Immune Parameters in Newborn Holstein Calves

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Colostrum supplementation aims to enhance health parameters in neonates; therefore a mixture of some natural beneficial materials can be useful as colostrum supplement (Mechor *et al* 1991; Franklin *et al* 2003; Godden *et al* 2009). Eighteen newborn Holstein calves divided into three groups receiving one or two doses of Calf Biogenic Anti-Scour (CBAS) containing bovine growth hormone, IGF-1, insulin, prolactin, lactoferrin, Immunoglobulin Y, or phosphate-buffered saline (as control) added to colostrum, and then to whole milk. All calves were fed equally throughout the experiment. Blood samples were collected at 0, 7, 14, 28, 42 days after birth and also at weaning date. Sera were analyzed for immunoglobulin G (IgG) assay. Daily starter intake and also liveweight changes were recorded. Repeated data were analyzed as repeated measures design and others as completely randomized design.

Results showed that CBAS supplementation has no significant effect on serum IgG concentrations ($p>0.05$). CBAS supplementation caused a marked increase in starter intake than control ($p<0.05$). Average daily gain in CBAS groups was significantly greater than control ($p<0.05$). CBAS supplementation shortened rumination and weaning dates as compared to control ($p<0.05$). Overall scour point in CBAS groups was non-significantly greater than control ($p=0.12$).

Table 1. Least square means and means of all variables with means comparison between groups

group Variable	control	One dose	Two dose
IgG [ng/ml]	23.23 [a]	25.58 [a]	24.18 [a]
Starter intake [g/day]	370.0 [ab]	737.5 [b]	862.5 [a]
ADG [g/day]	537 [b]	633 [a]	643 [a]
Rumination date [dayth]	24.0 [a]	18.8 [b]	17.7 [b]
Weaning date [dayth]	54.2 [a]	41.0 [b]	39.3 [b]
Scour point	2.0 [b]	2.4 [a]	2.2 [a]

* In each column, means with different superscript letters are statistically different ($p<0.05$)

In conclusion, we suggest that CBAS supplementation is effective to improve health and immune parameters in newborn calves, probably by reducing incidence of scour and enhancing IgG biosynthesis. It can also affect performance of calves with stimulating starter intake and preceding weaning date.

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