

Concentrated Bovine Serum Globulin Protein as a Colostrum Replacement/ Supplement in Receiving Dairy Beef Calves

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This experiment was run to show the effectiveness of utilizing spray dried bovine serum globulin protein (BGP) as an effective colostrum adjunct for the attainment of passive immunity in receiving dairy beef calves less than 24 hours of age. Calves were randomly assigned to four groups. Two groups received 1/2# of an all milk milk replacer on reception at a calf ranch. Two groups received 1/2# of spray dried BGP on reception. Over a one month period **4198 calves** were received. **1779** calves received 1/2# **milk replacer** only upon arrival. **2375** calves received 1/2# **dried serum protein** upon arrival. Calves were housed in individual wood calf hutches of three calf hutches per unit. Calves receiving only milk replacer (**#1779**) had a mortality of **11.7% (209/1779 died)**. Calves receiving BGP had a mortality of **3.7% (89/2375 died)**. The overall death rate of calves, measured for a period of sixty days from arrival was **298/4154 died, a 7.2% death loss**. This experiment shows that if calves received BGP there was a **decrease in death loss of 8%** over a 30 day period. All calves were receiving calves which had questionable colostrum ingestion and questionable colostrum immune protection.

A second experiment was run to compare the effect on scours and serum IgG levels by orally dosing incoming day-old calves with 45 or 90 grams of bovine serum globulin protein (BGP), 45 grams of BGP plus 10 grams of egg yolk IgG, or milk replacer. Calves were

randomly assigned to four groups. Group one received 45 grams of bovine globulin protein, group two received 90 grams of BGP, group three received 45 grams of BGP with 10 grams of egg IgG and group four received 1/2# of all milk milk replacer. Calves were bottle fed upon arrival at the ranch. Blood was obtained through jugular puncture on arrival and at 24 hours. Blood IgG concentrations were measured through R.I.D. technique. Scour scores were periodic visual observation. Scores were 1=normal, 2=pasty formed, 3=pasty unformed, 4=watery, 5=watery with blood. BGP enhanced the IgG concentrations of calves that were below 6mg/ml initial IgG concentration. There was a decrease in the scour scores in calves receiving BGP and BGP with egg IgG in comparison to milk replacer. Blood IgG levels at 24 hours ranges from 1.9 to 7.8 mg/ml higher comparing BGP over milk replacer. The range in scour scores was 2.3 (highest) with milk replacer to 1.5 (lowest) with BGP. These data suggest that it may be beneficial to utilize BGP in newborn calves that have inadequate colostrum immunity. Using both sets of data it appears that the benefits of oral administration of dried bovine globulin protein may well have a place in newborn calves as a supplement to colostrum, and as an enhancement to reduce failure of passive transfer in calves that have received inadequate amounts of colostrum or poor quality colostrum.

Comparison of dam and neonatal trace mineral levels in Nebraska sandhills beef cattle

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Trace mineral deficiencies in copper, selenium, zinc, and manganese have been reported from neonates and perinatal calves in Western Nebraska, including the Gudmundsen Sandhills Laboratory (GSL) at Whitman, NE. Deficiencies or imbalances of trace minerals such as copper and selenium may play an independent or

interacting role in the neonate's ability to produce immunity. To try and document the effect of these non-infectious conditions and the role they may play in neonatal and perinatal losses in West Central Nebraska, the following trial was initiated in 1993 at GSL.

One hundred 4-6-year-old MARC II cows were di-