

Effects of Niacin Supplemented Heifers on Cold Stress in Newborn Calves

M. R. Knerr, A. J. Bardwick, K. C. Sweeney, B. G. Bottcher, S. Carey, K. Harris

Introduction: In this experiment, the effect of niacin supplement (NiaShure) on cold stress of newborn Black Angus calves was tested. Niacin, a vasodilator, can increase the blood flow in mammals. If blood flow to the uterus increases, the fetus should have an increased level of nutrient uptake during the time the heifer is fed with niacin supplement. This will increase the brown fat in the calves at birth. An increased level of brown fat along with an increased level of niacin in the calf's blood should help the calf shiver better and stay warmer in a cold environment.

Abstract: The ability to improve survivability of cold stress in the bovine species through Niashure as a natural supplement was explored. Cold environmental conditions lead to high mortality rates in the bovine species. Improvement of survivability of cold stress will give economic benefits to the bovine industry.

Materials: For each heifer and calf the following was used:

- 9 red top vacutainers
- 9 red capped test tubes
- 9 10ml syringes of Saline
- 9 10ml syringes
- 9 5ml syringes of heparin
- 9 1 inch needles
- Heart rate strap w/ watch
- J-Lube
- Rectal thermometer
- Thermometer
- Catheter
- Vet wrap
- Medical tape



www.dreamstime.com

Discussion: There is a direct correlation between the treatment calves and heart rate. The heart rate of the treated calves was higher than the heart rate of the control calves. Niacin is a vasodilator which lowers blood pressure. Since blood pressure and heart rate are inversely related the heart rate in theory would rise with the introduction of Niacin.

Implication: The Niacin concentration in the samples has not been analyzed yet. Therefore, the data is inconclusive. If the data proves that Niacin improves the risk of cold stress in bovine, livestock producers who use this product will see a decrease in calf mortality rate caused by cold stress.

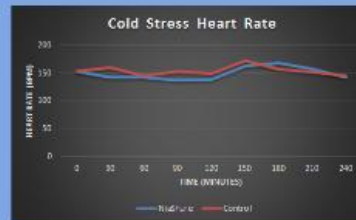
Methods: On January 27, 2015 heifers were sorted into treatment groups. Data through blood samples (10 ml of blood) was taken to determine natural amounts of niacin in each bovine. This same procedure was repeated on February 12, 2015. Heifers were fed Niashure through a Growsafe system until two weeks after calving.

Once a calf was born it was monitored to ensure it did not nurse. Colostrum samples were taken from the calf. Calculated colostrum (30 ml colostrum/ 1 kg calf weight) was fed to calf.

After 3.5 hours of life, a catheter was placed into the jugular vein, heart rate monitor fit, and temperature probe placed. The calf was then placed in the cold box or hot box. 10 ml of blood was drawn from the calf every 30 minutes in the hot or cold box. When blood was taken it was replaced with 10 ml of saline.



www.britannica.com



Data and Results: Currently the data has not been analyzed yet to determine results.

HR trends for non stressed calves

Mean: RT Niacin: 101.31, Control: 101.16



Dietary Treatment	Response Treatment
Control	Non-stressed
Control	Cold-stressed modified environment
Niashure	Non-stressed
Niashure	Cold stressed modified environment