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Determining the Effects of Weaning Methods on Circulating Glucose in Beef Calves

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A major goal of cow-calf producers throughout the world is to minimize stress of their livestock while still optimizing performance of each animal. Weaning is a particularly stressful time for both calves and their dams. Research and years of production in the United States has shown that fenceline weaning (calves and their dams are placed in pastures adjacent to each other) is often less stressful than abrupt weaning (calves are immediately moved to a location separate from their dams). However, there is limited data on which of these weaning methods is most efficient when calves are transported immediately following weaning, a practice that is common to many cow-calf producers who market their freshly weaned calves. Since stress is known to impair the release of insulin, subsequently increasing blood glucose levels, we proposed to assess the correlations between circulating blood glucose with changes in calf weight and calf average daily gain. To do so, *Bos taurus* calves (n=16) were randomly divided into two groups of equal numbers of heifers, bulls, and steers one week prior to weaning. One group was weaned by the fenceline (FL) method and one group was weaned abruptly (AB). On Day -4, calves and their dams were separated into the FL and AB groups; weights and blood from the jugular vein were collected from all calves. The FL calves and their dams were placed in pastures adjacent to each other. The AB calves and their dams were returned to their original pasture. On Day 0, all calves were weighed and blood was collected again. All calves, from both the FL and AB groups, were placed on a trailer (remaining divided into respective groups) and transported for two hours to a new location. At the new location, weights and blood samples were collected immediately. Calves then remained separated into their groups and offered hay and water *ad libitum* for 24 hours. At the end of that 24 hour period (Day 1), calves were reweighed and blood was collected. Each group was then placed in similar pastures with access to the same amount of feed, hay, and water daily. Weights were assessed 28 days post-weaning, with final blood sample also obtained at this time. Following each collection, blood was centrifuged and plasma was stored at -20°C. At the conclusion of the trial, plasma samples were analyzed for glucose concentrations. There was no difference ($P > 0.05$) in calf weight between treatment groups on Day -4, Day 0 pre-transport, Day 0 post-transport, Day 1, or Day 28. Thus, there was no difference ($P > 0.05$) in weight loss from transportation on Day 0. Similarly, blood glucose levels did not differ ($P > 0.05$) between FL and AB weaned calves at Day -4, Day 0 pre-transport, Day 0 post-transport, Day 1, or Day 28. Although this data shows that weaning method does not impact transportation shrinkage in calves, further research is warranted with a larger sample population.