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Blood gas analysis as diagnostic tool for early detection of respiratory disease in cattle

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Bovine respiratory disease is the most significant health problem facing in the U.S. beef industry. Blood oximetry is used in human medicine to diagnose respiratory disease and has been correlated to arterial hypoxia in cattle. Therefore, we evaluated the possible correlation between blood parameters and health and performance of immune-stimulated and hay-supplemented calves. Crossbred heifers (n=705; 179±0.58 kg) were assigned to 48 pens and 4 treatments in a randomized complete block design. No metaphylaxis (antibiotic) was used and calves received a corn gluten feed based ration (Ramp). Treatments were a factorial arrangement of supplemental hay (+HAY vs. -HAY) and immune stimulation (+IMMUN vs. -IMMUN). Calves assigned to +HAY received supplemental alfalfa hay for the first 14 days and +IMMUN calves received a DNA immunostimulant (Zelnate) on day 0. Calf average daily gain was greater (P<0.01) for +HAY than -HAY during the first 14 days but lower from day 14 to 28. Immune stimulated calves had lower (P<0.01) average daily gains from day 28 to 56 and from day 0 to 56. Treatments did not affect (P≥0.18) calf morbidity, mortality or blood parameters (pH, glucose, lactate, sO₂). Blood sO₂ correlated (P<0.05) with mortality (R²=0.08) and blood glucose correlated with first (R²=-0.22) and second (R²=-0.13) medical treatment. Lactate correlated (P<0.05) with first medical treatment (R²=-0.12) and mortality (R²=-0.12). These correlations suggest possible application of blood parameters as diagnostic tool.

Biography

Eben Oosthuysen is currently pursuing his Doctoral degree in Ruminant Nutrition at New Mexico State University, USA. His research focus on alternative management practices to improve feedlot receiving calf health in preparation for the soon anticipated restriction on antibiotic use in food producing animals. He has published his research findings as proceedings and abstracts in more than 17 occasions.

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