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Impact of creep feeding on subsequent performance and plasma parameters of feedlot steers

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A study was conducted to evaluate the impact of creep feeding and protein sources, notably DDGS, on blood plasma variables and growth in crossbred steer calves. Thirty-six crossbred steer calves were used in a randomized block design to compare creep feeding vs. non-creep feeding on plasma glucose, plasma urea nitrogen (PUN) and plasma non-esterified fatty acids (NEFA), as well as overall performance. NEFA was tested as a measure of the mobilization of body fat reserves due to diet. Steers were randomly selected to one of three treatments. Steers were creep fed supplements daily during the creep feeding phase. They remained in the same treatment groups and were moved to drylot pens (6 animals/pen; 2 pens/treatment) for the feedlot phase. Live weights and blood samples were taken on selected days. Glucose, PUN and NEFA concentrations were analyzed colorimetrically using Linear Enzymatic Glucose, PUN and NEFA-C kits, respectively. Additionally, fat depth and rib eye area (REA) were measured using ultrasonography. There were no differences in average daily gains (ADG) between protein sources during the creep feeding or feedlot phases. However, creep fed calves had a greater ($P < .01$) ADG than non creep fed calves (1.30 vs. 0.88 kg/day) at weaning. The ADG were similar among treatments during the feedlot phase. At weaning, plasma glucose concentrations were different ($P = .02$) between SBM and DDGS (87.23 vs. 94.41 mg/dL, respectively). After day 0, there were no differences in plasma glucose concentrations among treatments from day 56 to 176. The PUN concentrations were similar among treatments at weaning. At day 14, the SBM calves had greater ($P = .003$) PUN concentrations than DDGS (13.52 vs. 10.69 mg/dL, respectively); non creep-fed calves also had greater ($P = .0002$) PUN concentrations than creep-fed calves (12.11 vs. 9.64 mg/dL). At day 28, the non-creep fed calves had greater ($P = .02$) PUN concentrations than DDGS fed calves (13.65 vs. 11.53 mg/dL). At day 112, DDGS PUN concentrations were greater ($P = .05$) than non creep fed calves (10.14 vs. 8.43 mg/dL, respectively). Additionally, PUN concentrations for SBM were greater ($P = .09$) than DDGS and non creep (10.06, 8.55 and 8.74 mg/dL, respectively) at day 176. At weaning, plasma NEFA concentrations were different ($P = .006$) between DDGS and SBM (1,164.3 vs. 987.0 $\mu\text{Eq/L}$, respectively) as well as between SBM and non creep (1109.5 $\mu\text{Eq/L}$ fed calves ($P = .04$). After day 0, there were no differences ($P > .10$) in plasma NEFA concentrations among treatments and concentrations remained similar from day 14 to 176. Fat depth and REA steadily increased from day 0 to 176, but no differences were found among treatments. In conclusion, creep feeding with DDGS increased plasma glucose and NEFA concentrations; however these changes were not evident after 14 days on the feedlot phase. Creep feeding had little effect on PUN concentrations, but differences were seen at 14 days on the feedlot phase. These changes in plasma glucose and NEFA concentrations may be attributed to the fat content of DDGS.