Effects of zinc and copper source and concentration on feedlot performance and carcass characteristics in yearling steers.

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Crossbred steers (n = 288; initial BW = 320 kg ± 10.2) were used in a randomized complete block design to evaluate the effect of source and concentration of Zn and Cu on live performance and carcass characteristics. Steers were blocked by weight and randomly assigned to one of the 4 treatments (8 pens per treatment). Treatment included: 1) 90 ppm of Zn from ZnSO4 and 15 ppm of Cu from CuSO4 (Control, 100% sulfate); 2) 67.5 ppm of Zn from ZnSO4 plus 22.5 ppm of organic Zn and 11.25 ppm of Cu from CuSO4 plus 3.75 ppm of Cu from organic Cu (Organic, 75% sulfate, 25% organic); 3) 90 ppm of Zn from zinc hydroxychloride and 15 ppm of Cu from basic copper chloride (100% Hydroxy); and 4) 54 ppm of Zn from zinc hydroxychloride and 9 ppm of Cu from basic copper chloride (reduced Hydroxy, 60%). All steers were fed a typical high concentrate steam flaked corn based finishing diet twice daily. Steers were individually weighed on d -1, 0, 35, 70, 104, 173 and 174. On d 175, steers were transported to a commercial abattoir for slaughter. Initial and final BW, average daily gain, dry matter intake, and gain-to-feed were similar (P > 0.10) across treatments and averaged 318.9 kg, 586.5 kg, 1.54 kg/hd/d, 8.80 kg/hd/d, and 0.1753, respectively. Furthermore, hot carcass weight, subcutaneous adipose depth, Longissimus muscle area, calculated YG, marbling score and dressing percentage were similar (P > 0.10) across treatments. There was a trend (P < 0.12) for treatment to affect the likelihood that an individual carcass within each pen would grade USDA average Choice or higher (7.1, 9.7, 19.7, and 16.4% for the Control, Organic, Hydroxy 100, and Hydroxy 60 treatments, respectively). Results suggest that supplementing Zn and Cu from hydroxychloride sources at 60% of the level provided from sulfate or a sulfate-organic mixture will result in similar performance and carcass characteristics. Further research is necessary to determine the response of different amounts of zinc hydroxychloride and basic copper chloride in finishing diets on cattle performance and carcass merit.

KEYWORDS
Trace mineral source
Tetra-basic zinc
Tri-basic copper