Effects of copper supplementation on performance and carcass characteristics of cattle fed diets containing 60% DDGS.

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Dried distillers grains with solubles (DDGS) are an excellent source of energy and protein for feedlot cattle and their dietary inclusion may improve performance and reduce cost of gain. Because of the high S levels, DDGS have not typically made up the majority of the diet even when it would be economically advantageous to do so. Dietary S above 0.4% may reduce cattle performance and increase incidence of polioencephalomalacia. Copper binds with S in the rumen to form insoluble copper sulfides. The hypothesis was that including Cu in high DDGS diets would bind S, thereby reducing potential toxic effects and improving animal performance. The objective of this research was to determine effects of 3 supplemental Cu levels on performance and carcass characteristics of cattle fed diets containing 60% DDGS (S = 0.46%). Angus-cross yearling steers and heifers (n = 87; initial BW = 238 ± 36 kg) were blocked by sex and allocated to 12 pens. Treatments were: 1) 60% DDGS with 0 ppm Cu supplementation, 2) 60% DDGS with 100 ppm Cu supplementation, 3) 60% DDGS with 200 ppm Cu supplementation. The remainder of the diet was grass hay (10%) and a vitamin-mineral supplement (15%). Diets were offered ad-libitum throughout the finishing phase (168 d). Three randomly selected cattle from each pen (n = 36) were slaughtered on d 168. Carcass data and liver samples were collected. Copper supplementation did not affect ADG (P > 0.35). However, cattle that were supplemented with Cu had numerically lower DMI than those not supplemented, resulting in improved feed efficiency (P = 0.03) in cattle supplemented with Cu (G:F = 0.167, 0.177, and 0.177 for 0,
100, and 200 ppm Cu, respectively). There were no treatment effects ($P > 0.05$) on measured carcass characteristics. Cattle supplemented with 100 and 200 ppm Cu had higher liver Cu concentrations ($P < 0.0001$; mean $= 708.24$ and $933.32$ ug/g, respectively) than cattle that were not supplemented with Cu (mean $= 86.29$ ug/g). These data suggest that cattle consuming diets with S above the maximum tolerable limit may be supplemented with Cu to improve Cu absorption and feed efficiency. Effects on S absorption are being pursued.

**Key Words:** DDGS, feedlot cattle, copper