

Hunter MiniScan XE Plus Spectrophotometer every 24 h for 14 d starting at day 0. Each tray measurement was taken in triplicate to ensure uniformity of sampling. Results indicate that inclusion of beef tallow in diets containing DDGS may improve shelf life color characteristics, however, further research is required.

**Table 1. Colorimetric L\*, a\* and b\* values for fresh ground pork and pork sausage in retail shelf conditions from swine fed conventional CON, DDG, TAL, and TDG during the growing-finishing period.**

	FRESH			SAUSAGE		
	L*	a*	b*	L*	a*	b*
CON	49.70 <sup>a</sup>	1.44 <sup>a</sup>	12.18 <sup>a</sup>	46.62	2.69 <sup>a</sup>	13.05 <sup>a</sup>
DDG	47.96	1.51 <sup>a</sup>	14.17 <sup>a</sup>	42.62	3.26 <sup>a</sup>	13.37 <sup>a</sup>
TAL	49.65 <sup>a</sup>	2.04 <sup>a</sup>	12.12 <sup>a</sup>	45.65	3.36 <sup>a</sup>	13.52
TDG	48.22 <sup>a</sup>	1.70 <sup>b</sup>	11.66 <sup>a</sup>	43.60	3.66 <sup>a</sup>	12.38 <sup>a</sup>

<sup>a-c</sup>Means within a column lacking a common superscript letter differ significantly ( $p < 0.05$ ).

**Key Words:** dried distillers with solubles, tallow, pork quality

**108 Effect of supplemental molybdenum on forage-fed steers receiving high-sulfur water.** K. L. Kessler<sup>\*1</sup>, K. C. Olson<sup>2</sup>, C. L. Wright<sup>2</sup>, K. J. Austin<sup>1</sup>, P. S. Johnson<sup>2</sup>, and K. M. Cammack<sup>1</sup>, <sup>1</sup>University of Wyoming, Laramie, <sup>2</sup>South Dakota State University, Brookings.

Poor performance and S-induced polioencephalomalacia (sPEM) have been observed in regions with high-S livestock drinking water.

Identification of a feed supplement that ameliorates the effects of high-S water would benefit ruminant livestock producers in those regions. The objective of this study was to determine if supplementing Mo, a metallic trace element known to interact with S, improves health and performance of forage-fed steers administered high-S drinking water. Yearling steers ( $n = 96$ ) were randomly assigned to 1 of 3 treatment groups for a 56 d trial: low-S water (LS; 375 mg  $\text{SO}_4\text{-L}^{-1}$ ), high-S water (HS; 2,218 mg  $\text{SO}_4\text{-L}^{-1}$ ), or high-S water plus Mo (HSMO; 2,218 mg  $\text{SO}_4\text{-L}^{-1}$ ; 100 mg  $\text{Mo}\cdot\text{kg}^{-1}$  DM). All treatments were supplemented with 10 mg  $\text{Cu}\cdot\text{kg}^{-1}$  DM. Body weight and ruminal  $\text{H}_2\text{S}$  gas concentration were collected on d -1, 29, and 57. Animals were monitored  $\geq 3$  times daily for general health and signs of sPEM. One case of sPEM was confirmed in the HS treatment group. Feed intake was lower in HSMO steers than HS ( $P = 0.018$ ) and LS ( $P = 0.002$ ) steers. No intake differences were observed between LS and HS steers. Average daily gain was lower ( $P < 0.001$ ) in HSMO steers than LS and HS steers, with HS steers being intermediate to the other two treatments. No differences ( $P > 0.05$ ) in water intake were observed. There was no effect of treatment on initial or mid-trial ruminal  $\text{H}_2\text{S}$  gas concentrations. Final day ruminal  $\text{H}_2\text{S}$  gas concentration was greater in HSMO steers compared to LS ( $P = 0.006$ ) and HS ( $P = 0.013$ ) steers; no differences were observed between LS and HS steers. These results indicate that a Mo supplement is not beneficial in counteracting the effects of high-S water consumption, and may exacerbate the effects associated with high dietary S.

**Key Words:** sulfur, molybdenum, polioencephalomalacia

## Graduate Student Poster Competition-Ph.D.

**109 Effects of feeder design, gender, and dietary concentration of dried distillers grains with solubles on the growth and carcass characteristics of finishing pigs.** J. R. Bergstrom<sup>\*</sup>, M. D. Tokach, S. S. Dritz, J. L. Nelssen, J. M. DeRouchey, and R. D. Goodband, *Kansas State University, Manhattan.*

A total of 1,080 pigs (PIC 337  $\times$  1050; 35.1 kg) were used in a 99-d experiment to evaluate the effect of conventional dry (CD) and wet-dry (WD) feeder designs, gender (barrow or gilt), and dried distillers grains with solubles (DDGS) level (20 or 60%) on finishing pig performance. There were 5 pens per treatment for the 8 treatments, and 20 pens for the main effects. Pigs were sorted by gender into groups of 27, weighed, and allotted to pens. Diets were fed in 3 phases to d 78. On d 78, 2 pigs/pen were weighed and removed for harvest. Remaining pigs were fed a common diet containing 20% DDGS and 5 ppm Paylean until carcass data were obtained on d 99. Jowl fat samples were collected from 2 pigs/pen on d 78 and 99 for fatty acid and iodine value (IV) analysis. Overall, pigs using WD had greater ( $P < 0.001$ ) ADG (936 vs. 870 g/d), ADFI (2595 vs. 2292 g/d), final BW (128.2 vs. 121.8 kg), feed cost/pig (fd\$pig, \$94.12 vs. 82.04), HCW (95.0 vs. 90.4 kg), and backfat depth (BF, 18.8 vs. 16.3 mm), but decreased ( $P < 0.05$ ) G/F (0.36 vs. 0.38), fat-free lean (FFL, 49.8 vs. 50.6%), jowl IV (75.7 vs. 77.9), and margin-over-feed-cost (MOF, \$21.70 vs. 31.71). Feeding 60% DDGS from d 0 to 78 resulted in decreased ( $P < 0.02$ ) ADG (894 vs. 912 g/d), G/F (0.37 vs. 0.38), final BW (124.1 vs. 125.9 kg), fd\$pig (\$84.14 vs. 92.02), HCW (91.7 vs. 93.7 kg), and BF (17.1 vs. 18.0 mm), but increased ( $P < 0.05$ ) FFL (50.4 vs. 50.1%), jowl IV (81.7 vs. 72.0), and

MOF (\$29.81 vs. 23.60). Barrows had greater ( $P < 0.01$ ) ADG (914 vs. 893 g/d), ADFI (2533 vs. 2354 g/d), final BW (126.5 vs. 123.5 kg), fd\$pig (\$91.83 vs. 84.33), HCW (94.1 vs. 91.3 kg), and BF (19.3 vs. 15.8 mm); but reduced ( $P < 0.01$ ) G/F (0.36 vs. 0.38), FFL (49.5 vs. 50.9%), jowl IV (75.5 vs. 78.2), and MOF (\$22.88 vs. 30.52). In conclusion, the greatest MOF resulted from feeding gilts 60% DDGS using a CD feeder. More research with WD feeders is needed to resolve concerns with G/F, carcass leanness, and economic returns.

**Key Words:** DDGS, feeders, pigs

**110 Mannan oligosaccharides (MOS) modulate gene expression profile in pigs experimentally infected with porcine reproductive and respiratory syndrome virus (PRRSV).** T. M. Che<sup>\*1</sup>, R. W. Johnson<sup>1</sup>, K. W. Kelley<sup>1</sup>, W. G. Van Alstine<sup>2</sup>, K. A. Dawson<sup>3</sup>, and C. A. Moran<sup>3</sup>, <sup>1</sup>University of Illinois, Department of Animal Sciences, Urbana, <sup>2</sup>Purdue University, Animal Disease and Diagnostic Laboratory, West Lafayette, IN, <sup>3</sup>Alltech North American Bioscience Center, Nicholasville, KY.

This study characterized gene expression in peripheral blood mononuclear cells (PBMC) and bronchoalveolar lavage fluid (BALF) cells from control-or MOS (Bio-Mos)-fed pigs with or without PRRSV at d 7 postinfection (PI). Weaned pigs (3 wk old) fed 0% or 0.2% MOS diets were intranasally inoculated with PRRSV or medium at 5 wk old. Total RNA (3 pigs/treatment) was extracted from cells. Double-stranded cDNA was amplified, labeled, and further hybridized to the Affyme-