

91 The effects of on-farm pre-harvest magnesium supplementation and stunning method on pork muscle quality. D. J. Hanson*, E. van Heugten, and M. T. See, *North Carolina State University, Raleigh.*

The objective of this study was to determine the effects of pre-harvest magnesium supplementation and stunning method on longissimus dorsi (LD) and semitendinosus (SM) pork muscle quality. Magnesium was supplemented two days before harvest via a water medicator at a 300 ppm level. Following Mg supplementation, 18 barrows and 18 gilts from each of the two treatment groups (72 pigs total) were randomly selected. Eight barrows and 8 gilts from each of the control and Mg supplemented groups were transported to a packing plant utilizing electrical stunning technology (ES), 10 barrows and 10 gilts from each of the control and Mg supplemented groups were transported to a packing plant that utilizing carbon dioxide stunning technology (CS). Loading of each group was conducted at similar time, while the duration of transportation and lairage period was also kept similar as possible. All meat samples were sent to the NCSU Processed Meat Laboratory for further fabrication, analysis and 8 day refrigerated lighted retail display. Analysis for all treatment samples included blood serum Mg level, LD and SM ultimate pH, color (L^* , a^* , b^*), drip loss, and retail display purge loss. There were no differences ($P \geq 0.05$) in serum Mg levels among supplemented versus non-supplemented treatment groups. Serum Mg concentrations were greater ($P \leq 0.01$) in CS pigs compared ES pigs. There was no difference ($P \geq 0.05$) in the ultimate pH of LM and SM among supplemented versus non-supplemented treatment groups. The SM ultimate pH was higher ($P \leq 0.01$) in ES versus CS pig, 5.66 versus 5.44, respectively. Longissimus muscle samples from CS pigs had slightly lower L^* values on d 0 ($P = 0.05$) and d 2 ($P \leq 0.01$), compared to LM from ES pigs, 45.5 versus 46.8 and 54.2 versus 56.9, respectively. Drip loss (mg of fluid loss) for both the LM and SM was lower ($P \leq 0.001$) in CS compared to ES pigs. By d 4 and throughout the duration of the retail display, SM samples from CS maintained slightly lower ($P \leq 0.02$) L^* values than SM samples from ES pigs. There was no difference ($P \geq 0.05$) in retail display purge loss for the LM and SM among supplemented versus non-supplemented treatment groups. Retail display purge loss of the CS LM samples tended to be lower on d 2 ($P = 0.13$), d 4 ($P = 0.14$), d 6 ($P = 0.08$), and were lower ($P \leq 0.05$) on d 8 compared to ES pigs. Retail display purge loss of the SM was lower on d 2 ($P \leq 0.001$), d 4 ($P \leq 0.001$), d 6 ($P \leq 0.001$), and d 8 ($P \leq 0.02$) for CS compared to ES pigs. These data suggest there are no improvements in pork muscle quality due to on-farm Mg supplementation before harvest. CS technology appears to have a positive impact on pork LD and SM muscle quality.