The objective of this study was to determine if short-term supplementation of α-lipoic acid (LA) would enhance intramuscular uptake of creatine monohydrate (CMH) and improve fresh pork quality. Forty-eight commercial hybrid barrows were blocked by BW prior to test and randomly allotted to one of four treatments: no CMH or LA (Control); supplementation of 24g CMH/pig/day (Treatment 1); supplementation of 600mg LA/pig/day (Treatment 2); or combined CMH and LA supplements (Treatment 3). Treatments were administered for five days prior to slaughter. Twelve pigs per treatment were individually penned with ad libitum access to water and finishing ration. Treatments were administered orally to individual pigs in divided doses at 0600, 1200, and 1800 hours. Pigs were harvested at 113 kg BW in two groups of 24. Intramuscular pH was recorded with a PH-Star probe (SFK Tech., Inc) at 45-min postmortem (PH1) and again at 24-h (PH24) in the ham semimembranosus (SM) and loin muscle (LM) between the 10th and 11th rib (LM). A Meatcheck™ conductivity probe (SFK Tech., Inc) was used in the same locations. The Meatcheck™ index (PY) is a value from 0 to 100 with the higher value indicating higher water-holding capacity. Color (L-, a-, b-values) measurements were obtained with a Minolta colorimeter (CR-310) at 24-h postmortem on the cut lean surface of the ham gluteus medius (GM), SM, and LM. Two, 1-inch thick loin chops were removed from the loin for determination of Warner/Bratzler (WB) shear force and glycolytic potential. The intact SM and the posterior portion of the boneless loin were vacuum packaged and stored for 7 days to determine purge loss. A 2 x 2 x 2 factorial design was used to test the fixed effects of slaughter day, CMH, LA, and interactions. Lipoic acid LM PH1 (6.48 vs. 6.04) was significantly higher and LM L*-value (52.9 vs. 49.3) were significantly lower (P < .05) than controls. Lipoic acid 24-h loin pH (5.35 vs. 5.30; P = .11) and PY (40.3 vs. 30.9; P = .08) tended to be higher than CMH*LA. Cook loss was significantly (P < .05) lower for LA (27.96%) vs. CMH*LA (31.96%). Although not statistically different, purge loss from LA loin (3.32%) and SM (2.72%) was lower than CMH*LA loin (4.20%) and SM (3.63%). Therefore, it appears that LA had a positive effect on pork quality and the combination of CMH and LA appeared to be deleterious.