

543 Effects of available dietary carbohydrate and pre-slaughter stress on glycolytic potential and quality traits of pig muscles. G. Bee\*, *Swiss Federal Research Station for Animal Production, Posieux Switzerland.*

The objective of the study was to evaluate the effects of pre-slaughter stress and dietary treatments known to affect post mortem muscle metabolism on the glycolytic potential (GP) and quality traits of the longissimus (LM) and semitendinosus muscles (light: STL; dark: STD portion). A total of 48 Swiss Large White pigs (24 gilts, 24 barrows) were selected at 88 kg and individually fed 2.6 kg of a diet either high (H) or low (L) in available carbohydrate up to 107 kg. In order to simulate pre-slaughter stress, 6 gilts and 6 barrows from each dietary treatment were subjected to a transporting stress for 3 h prior to slaughter. The remaining pigs were walked from the pen to the abattoir avoiding all unnecessary stress. In the samples collected 24 h post mortem of the LM, STL and STD the GP was determined. Measurements of the pH were carried out in the LM 30 min and 24 h post mortem and in the STD and STL 24 post mortem. Minolta L\*, a\*, b\* values were assessed the day after dissection. In addition, muscles aged for 1 d and stored at -20C were thawed overnight at 4C (thawing loss) and then cooked to an internal temperature of 69C (cooking loss). Compared to the H-pigs, muscles of L-pigs had a lower GP (LM: 144 vs. 154  $\mu\text{mol/g}$ ; STL: 116 vs. 104  $\mu\text{mol/g}$ ; STD: 101 vs. 88  $\mu\text{mol/g}$ ;  $P < 0.02$  for each). Regardless of the diet, pre-slaughter stress reduced the GP in the STD (90 vs. 99  $\mu\text{mol/g}$ ;  $P < 0.05$ ), but not in the LM and STL. Neither diets nor pre-slaughter stress affected pH, but stress decreased meat temperature in the LM 30 min post-mortem (39.6 vs. 40.4C;  $P < 0.01$ ). In the STL, L\* (51.6 vs. 54.1) and b\* values (3.4 vs. 4.2) were lower in pigs fed diet L ( $P < 0.03$ ). Unexpectedly, pre-slaughter stress further accentuated the differences within diets ( $P < 0.01$ ). Diet L reduced cooking losses of the STD (14.5 vs. 16.0%) and STL (12.8 vs. 13.6%;  $P < 0.04$ ). Pre-slaughter stress increased thawing (7.5 vs. 6.4%) and cooking losses (13.6 vs. 12.8%;  $P < 0.02$  for each) only in the STL. The present data revealed that the diet induced decrease of the GP positively affected meat colour and reduced thawing and cooking losses, whereas pre-slaughter stress accentuated the negative effects only in the STL.

**Key Words:** Feeding, Pre-slaughter stress, Pork quality

J. Anim. Sci. Vol. 81. Suppl. 1/J. Dairy Sci. Vol. 86. Suppl. 1