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# Meat quality is associated with muscle metabolic status but not contractile myofiber type composition in premature pigs

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A b s t r a c t
Longissimus muscles were sampled from Erhualian (EHL) and Pietrain (PIE) pigs at 20 kg of body weight. No breed differences were detected in either the proportions or the RNA/protein expression of respective MyHC isoforms, or the mRNA expression of PGC-1a (all $P > 0.10$). However, meat quality traits were already divergent between breeds, and were associated with distinct energy metabolic status, as reflected by dramatically lower AMPK activity yet higher CK and LDH activities (all $P < 0.01$) in longissimus muscle of EHL pigs. Moreover, mRNA expression of glucocorticoid receptor (GR) was found to be higher ($P < 0.05$) in longissimus muscle of EHL pigs. These results indicate that the differences in meat quality traits occur early in premature pigs, and these are attributed to skeletal muscle energy metabolism and not contractile myofiber type composition. Breed-specific GR expression in muscle may be related to the pattern of energy metabolism and meat quality, yet the mechanism awaits further investigation.

Keywords: Pork quality, Energy metabolism, MyHC, AMPK, PGC-1a, Glucocorticoid receptor