



Improvement in the carcass traits and meat quality of growing-finishing Rongchang pigs by conjugated linoleic acid through altered gene expression of muscle fiber types

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ABSTRACT. A total of 160 Rongchang pigs (26.76 ± 1.78 kg) were randomly assigned to 5 dietary treatment groups until their body weight (BW) reached 90 kg. The diets were supplemented with 0, 0.5, 1.0, 1.5, and 2.0% conjugated linoleic acid (CLA). Our results showed that the 1.0 to 2.0% CLA-fed pigs had less back fat deposition when their BW reached 90 kg than the pigs that received less than 1% CLA. During the 30 to 60 kg growing period, 1.0, 1.5, and 2.0% CLA treatments improved pork quality by significantly reducing the pork pH ($P < 0.01$) and color value ($P < 0.05$), but they increased marble

scaling ($P < 0.01$). Similarly, the 1.5 and 2.0% CLA-fed pigs had more marble than other pigs when their BW reached 90 kg. Furthermore, CLA significantly affected the expression of muscle fiber-type genes. The 1.5% CLA-fed pigs exhibited the highest mRNA expression of MyHC1 and MyHC2a ($P < 0.05$) at 60 kg BW. At 90 kg BW, the highest expression of MyHC1 and MyHC2a ($P < 0.05$) was found in the 2.0% CLA group. However, MyHC2x was downregulated in the CLA-fed pigs at this time. In addition, CLA supplements did not evidently alter mRNA expression of MyHC2b at all times. These results demonstrate that CLA could affect carcass traits and improve the meat quality of growing-finishing pigs by altering the expression of genes related to muscle growth and development; 1-1.5% CLA was the most appropriate CLA dose.

Key words: Conjugated linoleic acid; Meat quality; Pig Muscle fiber; Gene expression