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ABSTRACT

Effects of fattening periods on the expression of adipogenic transcription factors in Wagyu beef cattle

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In this experiment, we studied the effects of fattening periods (at 19, 24, and 29 months of age) on the expression of the C/EBP family (C/EBPα, C/EBPβ, and C/EBPδ) and PPARγ protein levels by Western blot analysis from different fat depots (subcutaneous, intermuscular, and mesenteric fat tissue) of Japanese Black steers. The expressions of C/EBPβ-liver-enriched activator protein (LAP), which activates preadipocyte differentiation, in subcutaneous, intermuscular, and mesenteric fat tissue at 29 months of age were significantly lower than those at 19 months. On the other hand, the expressions of C/EBPβ-liver-enriched inhibitory protein (LIP), which represses preadipocyte differentiation, in subcutaneous and intermuscular fat tissue in 29 months of age were significantly higher than those at 19 months. The expressions of C/EBPα, which activates adipocyte terminal differentiation, in intermuscular fat tissue at 29 months of age were significantly higher than those at 19 months. No significant differences in the C/EBPδ and PPAR γ levels were observed in the fattening periods for any fat depots. These results suggest that adipogenic transcription factors, especially C/EBPβ and C/EBPα, play an important role in regulating adipogenesis during the fattening periods of Japanese Black cattle.

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