Effects of Dietary α-Linolenic Acid on Growth Performance, Meat Quality, Fatty Acid Composition and Liver Relative Enzyme mRNA Expression of Growing Meat Rabbits

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ABSTRACT

One hundred and fifty crossbred rabbits of New Zealand white rabbits × local white rabbits (9 weeks old) were allocated to five groups and to evaluate the effects of five levels of α-linolenic acid (ALA) addition (0, 1, 2, 3 and 4 g/kg diet, as-fed basis) in the diets on growth performance, meat quality, fatty acids composition of muscle and liver, acetyl-CoA carboxylase (ACC) and carnitine palmitoyl transferase 1 (CPT1) mRNA expression in the liver of growing meat rabbits were studied. The quadratic effect of ALA addition on average daily intake (ADI) was obtained (P<0.0001). ALA addition had significant influence on muscle color of longissimus lumborum (LL) included L*, a* and b*(P<0.0001, P = 0.0007 and P = 0.0120, respectively). The monounsaturated fatty acids (MUFAs) content of LL decreased with dietary ALA increase (P = 0.0001) and the polyunsaturated fatty acids (PUFAs) and C18:3 (n-3) contents in the LL and liver increased with dietary ALA increase (P = 0.0006, P<0.0001, P<0.0001, and P<0.0001, respectively). The acetyl-CoA carboxylase (ACC) mRNA expression in the liver decreased (P<0.0001) and carnitine palmitoyl transferase 1 (CPT 1) mRNA expression in the liver increased (P<0.0001) with dietary ALA increase.

Key Words: Rabbit, α-Linolenic Acid, Growth Performance, Meat Quality, Fatty Acid, mRNA Expression