

ABSTRACT

Heritabilities and genetic correlations of fatty acid compositions in longissimus muscle lipid with carcass traits in Japanese Black cattle

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Fatty acid composition and carcass traits of 2,275 Japanese Black steers and heifers were analyzed to estimate the heritabilities and genetic correlations using the REML procedure. Slices of LM at the 6th to 7th rib section were minced and homogenized, and total lipids were extracted for the analysis by a gas chromatograph. Oleic acid accounted for the majority (51.3%), followed by palmitic (26.4%) and stearic (10.8%) acids. Heritabilities of carcass traits were moderate to high, ranging from 0.34 to 0.61, and heritabilities of individual fatty acids varied largely from 0.00 to 0.78. Those of MUFA, SFA, and PUFA were estimated to be 0.68, 0.66, and 0.47, respectively. Predicted breeding values for MUFA in 99 sires ranged from -3.0 to 5.4%. Genetic correlations of fatty acid compositions with carcass traits were generally weak (-0.28 to 0.39). Low but positive genetic correlations were obtained between beef marbling, on which emphasis of selection has been placed, and oleic acid (0.19) or MUFA (0.23). The results indicated the possibility not only for genetic improvement in fat quality traits but also simultaneous improvements with carcass traits by appropriate selection program.

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