

ABSTRACT

**Fine-mapping of a marbling trait to a 2.9-cM region on bovine chromosome 7 in Japanese Black cattle.**

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To locate quantitative trait loci (QTL) for intramuscular fat deposition (marbling) in a local population of Japanese Black cattle, we performed a genome scan using a paternal half-sib family of Bull A. A marbling QTL was mapped in the region flanked by DIK0079 (20.7 cM) and TGLA303 (39.3 cM) on bovine chromosome (BTA) 7, affecting 5.0% of the total family variance. Haplotype analysis of the QTL region revealed that the marbling-increasing Q allele was transmitted from the dam. On the other hand, Bull B, a maternal half-sib of Bull A, did not receive the Q allele from its dam, based on the following findings: (i) a marbling QTL on BTA7 was not detected in the Bull B paternal half-sib family; (ii) recombination between DIK0079 (20.7 cM) and RM006 (25.4 cM) in the QTL region was observed in the maternal chromosome of Bull B; and (iii) the Q-harboring steers from Bull A exhibited significantly higher marbling than the steers from Bull B and the remaining steers from Bull A. To precisely compare the maternal chromosomes of both bulls, we constructed a bacterial artificial chromosome contig covering the region between DIK0079 and RM006 and developed DNA markers. The recombination occurred between DIK8042 and DIK8044, indicating that the marbling QTL was in a 2.9-cM region flanked by DIK0079 and DIK8044.

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