

ABSTRACT

**Novel SNP in 5' flanking region of *EDG1* associated with marbling in Japanese Black beef cattle**

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Marbling, defined by the amount and distribution of intramuscular fat, is an economically important trait of beef cattle in Japan. The *endothelial differentiation, sphingolipid G-protein-coupled receptor, 1 (EDG1)* gene has been considered as a positional functional candidate for the gene responsible for marbling. We have recently reported that 2 single nucleotide polymorphisms (SNPs), c.-312A>G in the 5' untranslated region (UTR) and c.\*446G>A in the 3' UTR in EDG1 were associated with marbling in Japanese Black beef cattle, but this was not functional and a causal mutation for marbling. In the present study, we detected 2 novel SNPs, referred to as g.1475435G>A and g.1471620G>T, in the 5' flanking region of the EDG1 between low-marbled and high-marbled steer groups, which were previously shown to have EDG1 expression differences in *musculus longissimus* muscle. The g.1475435G>A SNP seemed not to segregate in Japanese Black beef cattle. The g.1471620G>T SNP was associated with the predicted breeding value for beef marbling standard number by the analyses using Japanese Black beef cattle population. Based on these findings, we hypothesized that the g.1471620G>T SNP might have an impact on EDG1 expression and also marbling.

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