

_____ ABSTRACT _____

Relationship of the bovine growth hormone gene to carcass traits in Japanese black cattle.

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The bovine growth hormone gene (bGH) possesses three haplotypes, A, B and C, that differ by amino acid mutations at positions 127 and 172 in the fifth exon: (leucine 127, threonine 172), (valine 127, threonine 172) and (valine 127, methionine 172) respectively. The correlation between meat quality or carcass weight and these haplotypes was investigated in Japanese black cattle. Altogether, 940 bGH haplotypes were compared with respect to six carcass traits: carcass weight, longissimus muscle area, rib thickness, subcutaneous fat thickness, beef marbling score and beef colour. The frequency of the B haplotype was higher (0.421) than that of A (0.269) and C (0.311). High carcass weight and low beef marbling were associated with haplotype A ($p < 0.05$ and $p < 0.01$ respectively), whereas beef marbling was increased by haplotype C ($p < 0.05$). Estimated regression coefficient of the A haplotype substitution effect for carcass weight and beef marbling score were 5.55 (13.1% of the phenotypic SD) and -0.31 (17.0%) respectively. That of the C haplotype for beef marbling score was 0.20 (11.0%). The other traits showed no relationship to the haplotypes examined. The results of this investigation suggest that information pertaining to bGH polymorphisms in Japanese black cattle could be used to improve the selection of meat traits.

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