

ABSTRACT

**Mapping of Calf Death in Japanese Black Cattle**

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Weak calf syndrome (WCS) is a major cause of calf death in Japanese Black cattle. Among IARS disorders, the isoleucyl-tRNA synthetase c.235G>C mutation has been identified as one of the causes of WCS. However, calf deaths differing from those attributed to IARS disorder has been occurring. To identify other genes potentially responsible for these calf deaths, we constructed three populations of three bulls (Bull-1, -2 and -3) that did not carry the IARS mutation, and dead calves (18, 28, and 31 calves) and healthy cattle (18, 15, and 10 cattle) sired by these bulls. The populations were genotyped using the BovineSNP50 BeadChip, but homozygosity mapping did not detect any associated genomic regions with calf death. Linkage analysis performed using each population as a paternal half-sib family of Bull-1, Bull-2, and Bull-3 revealed that, in the Bull-1 population, calf death was mapped to the 8.94 Mb–14.53 Mb and 29.82 Mb–33.77 Mb regions of BTA29. The findings suggested that the incidence of calf death in calves sired by Bull-1 was a hereditary disease exhibiting a dominant, not recessive, inheritance pattern.