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Identification of complex vertebral malformation carriers in Holstein cattle in south China

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ABSTRACT. Complex vertebral malformation (CVM) is a recently described monogenic autosomal recessive hereditary defect of Holstein dairy cattle that causes premature birth, aborted fetuses and stillborn calves. Guanine is substituted by thymine (G>T) in the solute carrier family 35 member A3 gene (SLC35A3). A valine is changed to a phenylalanine at position 180 of uridine 5'-diphosphate-N-acetyl-glucosamine transporter protein. CVM is expected to occur in many countries due to the widespread use of sire semen. We developed a created restriction site PCR (CRS-PCR) method to diagnose CVM in dairy cows. This was tested on 217 cows and 125 bulls selected randomly from a Holstein cattle population in south China. Five Holstein cows and five Holstein bulls were identified to be CVM carriers; the percentages of CVM carriers were estimated to be 2.3, 4.0 and 2.9% in the cows, bulls and entire Holstein cattle sample, respectively.

Key words: Complex vertebral malformation; CVM carriers; CRS-PCR; Holstein bulls; Holstein dairy cows

