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# Association of genetic variations in the *ACLY* gene with growth traits in Chinese beef cattle

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**ABSTRACT.** ATP citrate lyase (ACLY) is the primary enzyme responsible for the synthesis of cytosolic acetyl-CoA, which is a key precursor of both fatty acid and mevalonate synthesis pathways. Genetic variation of the *ACLY* gene may influence multiple traits associated with animal production. Here, we identified three non-synonymous mutations in *ACLY* exons in five beef cattle populations using DNA pool sequencing and high-resolution melting analysis. Results from association analyses revealed that the single nucleotide polymorphism (SNP) g.17127C>T is significantly associated with chest girth ($P < 0.01$) and body height ($P < 0.05$) in the Fleckvieh x Zhangye local crossbred cattle, and with body slanting length ($P < 0.05$) in the Simmental x Guyuan local crossbred cattle. SNP g.40427T>C is significantly associated with an increase in chest girth ($P < 0.05$) in the Simmental x Huzhu cattle population. These results provide preliminary evidence that polymorphisms in the bovine *ACLY* gene are associated with growth traits in beef cattle in northwest China. However, a larger sample set is needed to validate these findings.

**Key words:** *ACLY* gene; Beef cattle; High-resolution melting; Growth traits

 