Association of chicken growth hormone polymorphisms with egg production

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ABSTRACT. Growth hormone (GH) has diverse functions in animals, together with other hormones from the somatotropic axis. Here, chicken GH (cGH) was investigated in recessive white chickens and Qingyuan partridge chickens as a candidate gene affecting egg production traits. Chicken egg production traits were studied in association with 4 selected single nucleotide polymorphisms (T185G, G662A, T3094C, and C3199T). Genotyping was performed by the polymerase chain reaction-ligase detection reaction method. T185G was significantly associated with the egg production traits of body weight at first egg (BW), egg weight at first egg (EW), and the total egg production of 300-day old birds (EN 300). T3094C was also significantly associated with certain egg production traits; however, it affected the 2 breeds differently. Haplotypes of the 4 single nucleotide polymorphisms were also significantly associated with egg production traits of chicken age at first egg laying, BW, EW, and EN 300. H1H6 was the most advantageous diplotype for egg production. We putatively concluded
that polymorphisms in the cGH gene and its haplotypes could be used as potential molecular markers for egg production traits to enhance the breeding programs of indigenous chickens.

**Key words:** Growth hormone gene; Ligase detection reaction; Chicken; Polymorphism; Egg production