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Molecular genetic diversity and maternal origin of Chinese black-bone chicken breeds

W.Q. Zhu[1,2], H.F. Li[2], J.Y. Wang[1], J.T. Shu[2], C.H. Zhu[2], W.T. Song[2], C. Song[2], G.G. Ji[2] and H.X. Liu[2]

[1]Jiangsu Institute of Poultry Science, Yangzhou, Jiangsu, China
[2]Animal Science and Technology College, Yangzhou University, Jiangsu, China

Corresponding author: H.F. Li
E-mail: lhfxf_002@ailiyun.com

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ABSTRACT. Chinese black-bone chickens are valued for the medicinal properties of their meat in traditional Chinese medicine. We investigated the genetic diversity and systematic evolution of Chinese black-bone chicken breeds. We sequenced the DNA of 520 bp of the mitochondrial cyt b gene of nine Chinese black-bone chicken breeds, including Silky chicken, Jinhu black-bone chicken, Jiangshan black-bone chicken, Yugan black-bone chicken, Wumeng black-bone chicken, Muchuan black-bone chicken, Xingwen black-bone chicken, Dehua black-bone chicken, and Yanjin black-bone chicken. We found 13 haplotypes. Haplotype and nucleotide diversity of the nine black-bone chicken breeds ranged from 0 to 0.78571 and 0.00081 to 0.00399, respectively. Genetic diversity was the richest in Jinhu black-bone chickens and the lowest in Yanjin black-bone chickens. Analysis of phylogenetic trees for all birds constructed based on hyplotypes indicated that the maternal origin of black-bone chickens is predominantly from three subspecies of red jungle fowl. These results provide basic data useful for protection of black-bone chickens and help determine the origin of domestic chickens.

Key words: Chinese black-bone chicken; cyt b; Genetic diversity; Maternal origin

