Linkage analysis of microsatellite markers on chromosome 5 in an F2 population of Japanese quail to identify quantitative trait loci affecting carcass traits

M. Ahmadi - Department of Animal Science, Faculty of Agriculture, Shahid Bahonar University of Kerman, Kerman, Iran.
A. K. Esmailizadeh - Department of Animal Science, Faculty of Agriculture, Shahid Bahonar University of Kerman, Kerman, Iran.
A. Ayatollahi Mehrgardi - Department of Animal Science, Faculty of Agriculture, Shahid Bahonar University of Kerman, Kerman, Iran.
E. Nasirifar - Department of Animal Science, Science and Research Branch, Islamic Azad University, Tehran, Iran.

An F² Japanese quail population was developed by crossing two strains (wild and white) to map quantitative trait loci (QTL) for performance and carcass traits. A total of 274 F² birds were reared and slaughtered at 24 days of age. Performance and carcass traits were measured on all of the F² individuals. Parental (P₀), F₁ and F² individuals were genotyped with 3 microsatellites from quail chromosome 5. Based on five quantitative genetic models analyzed, QTL affecting carcass efficiency, breast percentage, femur percentage, back weight and back percentage, head weight, gizzard weight, uropygial weight, liver weight and liver percentage and neck percentage were mapped. The results provided an important framework for further genetic mapping and the identification of quantitative trait loci controlling performance carcass traits in the Japanese quail.

Keywords: carcass trait, microsatellite markers, Quantitative Trait Loci

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In this article, we present the results of a study on the genetic mapping of carcass traits in the Japanese quail. A F² population was developed by crossing two strains (wild and white) to map quantitative trait loci (QTL) for performance and carcass traits. A total of 274 F² birds were reared and slaughtered at 24 days of age. Performance and carcass traits were measured on all of the F² individuals. Parental (P₀), F₁ and F² individuals were genotyped with 3 microsatellites from quail chromosome 5. Based on five quantitative genetic models analyzed, QTL affecting carcass efficiency, breast percentage, femur percentage, back weight and back percentage, head weight, gizzard weight, uropygial weight, liver weight and liver percentage and neck percentage were mapped. The results provided an important framework for further genetic mapping and the identification of quantitative trait loci controlling performance carcass traits in the Japanese quail.