

Abstract

Lots of efforts to improving body weights and body weight gain especially in commercial poultry result in weaken immune system performance and less reproductive ability of the birds. Therefore, the immune system might to be decreased due to applying similar breeding programs on quail to improve growth and productive performances. Growth performances and immune system responses are differently expressed in males and females; therefore, including of the sex effect in breeding practices is essential. Consequently, the aim of the current study was to evaluate genetic performance of male and female quails for growth and immunity in both Japanese and speckled Italian quail. Body weight (BW), average daily gain (ADG) and growth rate (GR) at different ages and humoral immune responses against SRBC and Newcastle virus disease were considered. Data were collected through 4 generations from 4181 and 381 Japanese and Speckled Italian quail, respectively, in Specific Domestic Animal farm in University of Zabol. Analyses were performed using R software. All of the traits have been analysed through a simple animal model for each sex, separately. For growth traits of both sexes in Japanese quail the highest estimate was for female BW0 (0.595) and the lowest was for BW5 (0.009). In Italian strain the highest and lowest heritability were 0.707 and 0.050 for BW0 and BW15 in females, respectively. Comparing two sexes, h^2 for ADG30-35 (0.001) and ADG20-25 (0.39) for male Japanese quail were the lowest and highest estimates, respectively. The correspondent values for Italian speckled quail were 0.012 and 0.32 for ADG30-35 in males and ADG30-35 in females, respectively. Heritability estimates for IgN, IgM, IgY and IgT titers for males and females the estimates were in the range of 0.009 to 0.99 for Japanese quail and 0.147 to 0.617 for Italian speckled quails. According to the results, estimates for growth and immune performances in wild and Italian speckled quails in males and females were variable.

Keywords: Sexual dimorphism, Growth traits, humoral immunity, genetic evaluation



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**Genetic analysis of sexual dimorphism for
growth traits and immune responses in quail**

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