

## Abstract

Quail production considered major attention due to some advantages such as resistance against disease, low-cost feeding, fast growth and although their wholesome and marketable production. The aim of the current study was to estimate maternal genetic and non-genetic effects on growth and immunity of wild and speckled Italian quails kept on Research Center of Specific Animals. Recording of the birds and registration were first initiated at fall 2015 and finished at spring 2017. To data analyses, records of the 4181 birds have been utilized through 5 consecutive generations.. Phenotypic and genetic parameters were estimated for growth traits (body weights and average daily gain) from hatch to 45 day old with 5 days interval and humoral immunity of wild and Italian speckled quails. (Co)variance estimates of growth and immunity performances were estimated through 6 animal models. DIC criterion have been used to choose the best fitted model ( $P = 0.05$ ). Humoral immune responses were antibody titration (total titers, resistant to 2-mercaptoethanol (IgY) and sensitive to 2-mercaptoethanol (IgM) against sheep red blood cells (SRBC) and antibody titers against NDV. According to the best fitted model, direct heritability for IgN, IgY and IgM were 0.04, 0.079 and 0.035 for wild strain and for Italian speckled strain were 0.262, 0.164 and 0.0006 respectively. Maternal heritability estimates were also 0.075 and 0.268 for wild strain and for Italian speckled quail were 0.282, 0.401 and 0.633 for corresponding traits, respectively. Estimated  $r_{am}$  in Italian strain for IgN, IgY and IgM were 0.121, 0.297 and -0.171, respectively. In the current study direct genetic correlation between immune traits of wild strain were estimated for IgN and IgY (0.180), IgN and IgM (-0.538) and IgY and IgM (-0.027) and moreover maternal genetic correlation just estimated for IgN and IgM (0.339). Direct genetic correlation between immune performances and body weights for wild strain were very variable and varied between -0.007 (between IgM and BW10) to 0.906 (between IgN and BW0). These estimates for Italian strain were between 0.04 (IgN and BW25) to 0.902 (IgN and BW5). Moreover, maternal genetic correlation between immunity and growth in wild strain were mostly negative while correlation between IgY-BW30 and IgY-BW35 were -0.025 and -0.128 as the highest and lowest estimates. Corresponding values for Italian strain were also variable and varied between -0.019 to 0.318 for maternal correlation of IgY-BW30 and IgM-BW25, respectively. Results of current study showed genetic selection for growth traits might not to be ensure optimum performance due to adversely impact on immune traits. Moreover, ignoring maternal effects lead to lack of optimum results.

**Key words:** Antibody, Body weight, Genetic correlation, Humoral immunity, Maternal effects



University of Zabol

Faculty of Agriculture

Department of Animal Science

The Thesis Submitted for M.Sc. Degree of Animal Breeding and Genetics

Title:

**Estimation of maternal genetic parameters for growth and immunity  
traits in wild and Italian speckled quail strains**

**Supervisor**

Dr. Ali Maghsoudi

Dr. Mohammad Rokouei

**Advisers**

Dr. Hadi Faraji- Arough

Dr. Farzad Bagherzadeh Kasmani

**By**

Hojjat sarvari-kaluoti

Winter 2018