Effects of selection for increasing early growth rate on growth and carcass characteristics of Japanese quail

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ABSTRACT

This study aimed to investigate the effects of selection for high early growth rate during 1-21 days of age (GR_{1-21}) on growth traits, some plasma constituent and carcass characteristics. An experiment was carried out at the farm of the Poultry Research Center, Faculty of Agriculture, Fayoum University and continued for six generations including 10,024 for two lines (the selected line, HGR_{1-21} and the control line, CL) of Japanese quail chicks. The HGR_{1-21} had better BW_{21}, BW_{35}, GR_{1-21}, GR_{1-35} and BWG_{1-35} than the CL. Generation of selection significantly affected all growth traits. Females had significantly higher BW_{21}, BW_{35}, BWG_{1-35} and GR_{1-35} than males.

Quails of HGR_{1-21} had lower high density lipoprotein (HDL) and higher triglycerides (TG) than the CL. Females had higher TG and lower HDL than males. Quails of HGR_{1-21} had higher carcass %, dressing %, weights of giblets, heart, gizzard and liver than CL by 3.65%, 2.59, 23.79, 68.42, 13.21 and 23.47%, respectively. Females had higher weights of giblets, gizzard and liver than males by +12.41%, 14.64% and 12.34%, respectively. The HGR_{1-21} had higher ether extract % (+24. 28%) and lower moisture% (-4.79%) than the CL. GR_{1-21} showed moderate heritability (h^2) of 0.28 and ranged from 0.20 to 0.29 for growth traits. The $GR_{١-21}$ found to be positively genetic and phenotypic correlated (r_g & r_p) with BW_{21}, BW_{35}, BWG_{1-35} and GR_{1-35}, with r_g ranged from moderate to high (0.24 to 0.70) and r_p ranged from low to medium (0.03 to 0.41), however there were negative r_g and r_p between GR_{1-21} and BW_1 being -0.15 and -0.50,respectively. Genetic response showed superiority of the selected line than the control ($P< 0.05$) for selection criteria (+0.04) .Selection for GR_{1}-$_{21}$ had desired genetic gain with all studied growth traits, except BW_1. Also, carcass traits and vital organs were improved due to selection for GR_{1}-$_{21}$.

Key words: selection, early growth rate, carcass characteristics, genetic gain and Japanese quail.