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Agricultural Research, Education and Extension Organization
Animal science research institute of Iran

Effects of larva of darkling beetle (mealworm) on performance and immune responses of broiler chickens

Research worker: Amir Hossein Alizadeh-Ghamsari

Abstract

This experiment was conducted to evaluate the dietary inclusion effect of larva of darkling beetle (mealworm) on performance and immune responses of broiler chickens. A total of

700 day-old Ross 308 boiler chickens were attributed in a completely randomized design with seven treatments and five replicates of 20 birds each. Experimental treatments were included 1) diet without insect powder or corn gluten meal (control), 2 to 4) diets contained

1, 2 and 3% mealworm, 5 to 7) diets contained 1, 2 and 3% corn gluten meal. During the experiment (days 1 to 24), productive traits such as body weight (BW) and feed intake (FI) were recorded periodically and feed conversion ratio (FCR) were calculated. Blood samples were taken from three birds per replicate at the age of 24 days. Serum samples were subjected to analyze some blood parameters. Dietary inclusion of mealworm up to level of

3% had no significant effect on performance and blood parameters. Total antibody and IgY titers (in response to SRBC injection) were significantly increased in birds received mealworm ($P<0.05$). Orthogonal contrasts results showed cellular immunity (cutaneous hypersensitivity reaction, 24 hours after DNCB injection), in birds fed with mealworm was significantly stronger, also total antibody and IgY titers were higher than those received corn gluten meal ($P<0.05$). Dietary inclusion of mealworm up to level of 3% in the starter and grower diet (days 1 to 24) had to no negative effect on performance of broiler chickens and can boost the immunity.

Keywords: larva of darkling beetle (mealworm), performance, immune response, broiler chickens.