Abstract
This experiment was conducted to evaluate the effect of adding *Plantago ovata* to diet on immune response, egg quality and serum metabolites during laying period of Japanese quails. In this experiment, 112 quails were used for 60 days in four experimental groups (0, 1, 2, and 3% of the *Plantago ovata*) with 5 replications. The experimental groups did not have a significant effect on feed intake in the third week ($p>0.05$). However, they had a significant effect on the first, second and fourth week ($p <0.05$). The effect of experimental groups on the feed conversion ratio in the first, third and fourth week were not significant however it was significant on the second week ($P<0.05$). The effect of experimental groups on egg indices and immune response in different experimental groups did not show significant difference. The experimental groups changed some of the blood parameters so that the effect of experimental groups on glucose, calcium, phosphorus, AST, ALT and albumin was significant ($p <0.05$). In terms of numberical, the highest amount of glucose was found in the experimental treatments containing 3% of *Plantago ovata* which had a significant difference with other treatments ($p <0.05$). The highest amounts of calcium, phosphorus and AST were in the treatment containing 2% of *Plantago ovata*. The highest amount of ALT was found in treatment containing 2% of *Plantago ovata* treatments, which showed a significant difference with other treatments ($p<0.05$). And the highest amount of albumin was found in the treatment containing 2% *Plantago ovata*, which showed a significant difference with the treatment containing 1% of *Plantago ovata* ($P<0.05$). This study showed that the use of *Plantago ovata* in the diet of Japanese quail improves feed intake and blood parameters.

Keywords: Plantago ovata, Quail, Immune Response, Egg Shell, Feed Conversion Ratio, Cholesterol

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Effect of adding Plantago ovata to diet on performance, immune response, egg quality and serum metabolites during laying period in Japanese quail

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