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The Thesis Submitted for the Degree of Master of Science in Poultry Nutrition

Effects of different levels of *Alhaji maurorum* L. on performance, carcass traits and blood biochemical parameters in the growth period of Japanese quail

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Abstract:

This experiment was performed to investigate the effects of different levels of *Alhaji maurorum* L. on performance, carcass traits and blood biochemical parameters in the growth period of Japanese quail. In this study, 300 quail chicks were used in a completely randomized design in 5 experimental groups with 6 replications and 10 quail chicks in each replication from 14 to 35 days old. Experimental treatments included: treatment 1 (control), treatment 2 (containing 1% *Alhaji maurorum*), treatment 3 (containing 2% *Alhaji maurorum*), treatment 4 (containing 3% *Alhaji maurorum*) and treatment 5 (containing 4% *Alhaji maurorum*). The results of this experiment showed that the groups receiving levels of 2 and 3% *Alhaji maurorum* had more weight gain in the whole breeding period than the control group without any significant difference in feed consumption compared to the control treatment ($P < 0.05$). Feed conversion ratio in the first week of rearing period in the experimental groups was affected by 2 and 3% *Alhaji maurorum* levels ($P < 0.05$). The effect of using different levels of *Alhaji maurorum* on meat quality parameters was also considerable and the meat of birds fed with different levels of *Alhaji maurorum* had a higher water holding capacity than the meat of that of birds in control group ($P < 0.05$). Also, the percentage of drip loss, cooking loss and freezing loss in the experimental groups was significantly lower than the control treatment ($P < 0.05$). Malondialdehyde concentration in groups receiving different levels of *Alhaji maurorum* was significantly affected by experimental treatments ($P < 0.05$). Different levels of *Alhaji maurorum* had no significant effect on the liver enzymes aspartate aminotransferase, alanine aminotransferase and alkaline phosphatase, while 2% *Alhaji maurorum* level caused a significant difference on lactate dehydrogenase concentration with the control group. Different levels of *Alhaji maurorum* in the diet had significant effects on total antioxidant status and antioxidant enzymes, and levels of 2 to 4% of *Alhaji maurorum* had higher total antioxidant capacity as well as serum superoxide dismutase and glutathione peroxidase enzymes than the control treatment ($P < 0.05$). Treatments receiving different levels of *Alhaji maurorum* in the challenge with sheep red blood cells had higher antibody titers than the control group ($P < 0.05$). According to the results of this study, it was concluded that 2 and 3% levels of *Alhaji maurorum* have the best effect on the quality and performance parameters of growing Japanese quail and therefore the use of these levels of *Alhaji maurorum* in their diet is recommended.

Keywords: Antioxidant, Japanese quail, *Alhaji maurorum*, Immune system, Feed conversion ratio.