Abstract

The current study was conducted to investigate the effect of *Nigella sativa* (NS) on performance, immune system and gut microflora of Japanese quails under aflatoxicosis. A total of 600 seven-day-old quails chicken were randomly allocated to 8 treatments with 5 replicates (15 birds per replicate) as a completely randomized design in a factorial arrangement (2×4). Treats included 1) without AFB1-without NS, 2) without AFB1-with 0.5 percent NS, 3) without AFB1-with 1 percent NS, 4) without AFB1-with 1.5 percent NS, 5) with 2.5 mg/kg AFB1-without NS, 6) with 2.5 mg/kg AFB1-with 0.5 percent NS, 7) with 2.5 mg/kg AFB1-with 1 percent NS, 8) with 2.5 mg/kg AFB1-with 1.5 percent NS. Various levels of NS significantly affected feed intake (*P*<0.0002) and weight gain (*P*<0.0001). Feed intake and weight gain was decreased and FCR increased significantly (*P*<0.0001) by AFB1. The interaction between different levels of NS and AFB1 on feed intake (*P*<0.042) and weight gain (*P*<0.013) was significant. Adding NS to diet significantly (*P*<0.025) increased relative weight of Bursa. The highest relative weight of Bursa was observed in birds fed diet without AFB1-with 1.5 percent NS. Level of 2.5 mg/kg of AFB1 caused a significant (*P*<0.003) increase in relative weight of liver. The interaction between different levels of NS and AFB1 on relative weight of Bursa was also significant (*P*<0.046). All levels of NS in the presence of AFB1 improved the relative weight of Bursa. Different levels of NS in the diet significantly (*P*<0.011) decreased the number of coliforms, specifically in treat 3 and significantly (*P*<0.0001) increased lactic acid bacteria and total colony count in treatments 3 and 4, respectively. Level of 2.5 mg/kg of AFB1 significantly increased the number of coliforms and decreased the number of lactic acid bacteria (*P*<0.0027) and (*P*<0.0001). Adding NS at different levels in the diet significantly (*P*<0.0001) improved antibody titer against Newcastle disease virus and SRBC. The best antibody titer against the both of immunity test was observed in treat 4. Consecutively level of 2.5 mg/kg of AFB1 significantly (*P*<0.0012) decreased antibody titer against Newcastle disease virus and antibody titer against SRBC (*P*<0.0001) in the second injection. Different levels of NS in the diet caused a significant (*P*<0.0001) difference in the hematocrit percent, relative weight of heart and MDA. Level of 2.5 mg/kg of AFB1 in the diet decreased hematocrit percent (*P*<0.0001) and relative weight of heart (*P*<0.001) and, also increased MDA significantly (*P*<0.0001). The interaction between different levels of NS and AFB1 on MDA were significant (*P*<0.0001). In the presence of AFB1 all levels of NS decreased MDA, but the lowest MDA was observed in treat 8.

Key words: Quail, Aflatoxicosis, *Nigella sativa*, performance, Immune system, Microflora
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