

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 chick were randomly allocated to 8 treatments with 5 replicates (15 birds per replicate) as a completely randomized design in a factorial arrangement (2×4). Treatments 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 were 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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