Abstract

This experiment was conducted to evaluate the inhibitory ability of Roselle (*Hibiscus Sabdariffa*) against aflatoxin B_1 (AFB_1). A total of 192 one-day-old broiler chicks were divided into four experimental groups: without Roselle-without aflatoxin B_1 (Control), without Roselle and with aflatoxin B_1 (AFB_1 group), with Roselle-without aflatoxin B_1 (ROS group), with Roselle-with aflatoxin (AFB_1-ROS group). Ten gram of Roselle per kilogram of diet was added to Roselle receiving groups and AFB_1-treatments received 2.5 milligram of AFB_1 per kilogram of diet. The effect of various treatments on feed intake was significant ($P < 0.05$) in which the lowest and highest feed intake were seen in AFB_1 and ROS groups, respectively. Body weight gain did not differ between AFB_1-ROS and control groups ($P > 0.05$). Feed conversion ratio was not significantly affected by neither aflatoxin nor Roselle administrations ($P > 0.05$). However, AFB_1 group had a higher feed conversion ratio than other groups ($P < 0.05$). The lowest relative weight of heart was observed in the AFB_1 group but the highest and lowest relative weight of bursa of Fabricius belonged to ROS and AFB_1 groups, respectively ($P > 0.05$). The highest and lowest relative weight of liver were observed in $AFB_1$and ROS groups, respectively. The activities of lactate-dehydronage (LDH), gamma-glutamyl transferase (GGT), aspartat amino transferase (AST), alanin amino transferase (ALT) and alkalin phosphatase (ALP) enzymes in AFB_1 group were higher than other groups ($P < 0.05$). The antibody titer against Newcastle virus disease was lower in AFB_1 group than the ROS group ($P < 0.05$). The highest antibody titer against sheep red blood cells (SRBC) belonged to ROS group and followed by AFB_1-ROS groups and control. There was no significant effect of different treatments on hematocrit percent ($P > 0.05$). Increase in skin thickness of challenged birds with 2, 4-dinitrochlorobenzene (DNCB) was lower in AFB_1 group than other groups ($P < 0.05$) but the most skin thickness was seen in ROS group. The ash contents of toe and shank were significantly different among treatments ($P < 0.05$) in which the highest ash contents of toe and shank belonged to ROS group. The highest and lowest amount of malondialdehyde (MDA) in fresh and frozen meat samples was observed in AFB_1 and ROS groups, respectively ($P < 0.05$). The *E. coli* population in ileum contents was increased in AFB_1 group ($P < 0.05$) while their colonies decreased by the use of Roselle in the diet ($P< 0.05$). In contrast, the use of Roselle in the diet increased the lactic acid bacteria in the ileum contents ($P < 0.05$).

Keywords: Broiler chicken, Aflatoxicosis, *Hibiscus Sabdariffa*, Performance, Immunity, Liver enzymes

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Effect of *Hibiscus sabdariffa* on performance, immune response, and biochemical parameters in broiler chickens fed normal or aflatoxin contaminated diets

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