



MINISTRY OF JIHAD-E-AGRICULTURE

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Effect of toxin binder and prebiotic on performance, blood parameters, immunity and gastrointestinal tract of broiler chickens feed diets contaminated with aflatoxin B1

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Abstract:

This study aimed to evaluate the efficiency of the dietary inclusion of commercial toxin binders (CTs) and prebiotic on growth performance, immune responses, intestinal morphology and blood parameters of broiler chicks fed with aflatoxin and non aflatoxin-contaminated diets. A total of 600 one-d-old male Ross 308 broiler chicks, initial weight of 42 ± 3 g, were used in 10 treatments with 6 replications ($n=10$ birds). ASRI1, ASRI2 commercial toxin binders and Lactose prebiotic were added to diets. Experimental diets were including 1) basal diet without aflatoxin and additive (NC), 2) basal diet containing aflatoxin (PC), 3) NC diet containing ASRI1, 4) NC diet containing ASRI2, 5) NC diet containing prebiotic, 6) PC diet containing ASRI1, 7) PC diet containing ASRI2, 8) PC diet containing prebiotic, 9) PC diet containing ASRI1+prebiotic, 10) PC diet containing ASRI2+prebiotic. Growth performance, humoral and cellular immunities, jejunal morphology and some blood parameters were assessed. Results showed that broiler chicks fed with PC diet showed higher feed conversion ratio and lower body weight in grower and finisher periods. Broiler chicks fed with PC diets showed lower immunoglobulin G and M and cellular immunities compared with NC diet. PC group also showed lower values for villus length, villus width and crypt depth and also higher values for liver enzymes concentrations compared with PC diet. However, dietary inclusion of prebiotic and CTs, singly and combined form, improved growth performance in grower and finisher periods, cellular and humoral immunities, intestinal morphology and the serum concentration of triglycerides, cholesterol, glucose and liver enzymes of broiler chicks fed with aflatoxin.

Key words: Aflatoxin, ASRI1 toxin binder, broiler chicks, growth performance, humoral immunity, prebiotic