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Effect of toxinbinder (Toxeat) on blood parameter, gut and liver function related gene expression in broiler fed with aflatoxin contaminated diet

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Abstract

This study was conducted to investigate the effects of Toxeat®, on broiler chickens fed with aflatoxin contaminated rations. This experiment was conducted with 6 treatments and 5 replicates with 12 chicks in each replicate. Experimental treatment including; T1: Negative control, T2: T1+ Aflatoxin (positive control: PC), T3: PC+1 kg/ton of Toxeat®, T4: PC+2 kg/ton of Toxeat®, T5: PC+3 kg/ton of Toxeat®, T6: PC+1 kg/ton of Toxeat® without hydrated sodium calcium aluminosilicate. Level of aflatoxin in 1-21 day was 1500 ppb in Kg of diet and in 22-42 was 500 ppb per kg of diets. In this phase of research, performance, carcass characteristics, gene expression, gut morphology, and serum biochemistry was investigated. According to results, body weight, feed intake and feed conversion ratio at the ages of 21, 28, 35 and 42 were different significantly ($p < 0.05$). The highest and the least production index were observed in negative, positive groups with 1kg/t Toxeat®, positive with 2 Kg/ton Toxeat® and positive groups respectively. The effects of dietary treatments on carcass yield and relative weight of thigh, breast, heart, gizzard, bile sac, spleen, bursa of fabericius and abdominal fat were not significant. But liver relative weight was affected by dietary treatments ($p < 0.05$).

Results related to biochemical factors including phosphorous, calcium, cholesterol, HDL, total protein, albumin, uric acid did not exhibit any significant differences. But glucose, triglyceride and LDL were affected ($p < 0.05$). the result showed significant differences between dietary treatments regarding to the Enzymes activities of lactate dehydrogenase, alkaline phosphatase, gamma- glutamyl transferase, AST and ALT ($p < 0.05$). villus heights, villus width, crypt depth and villus height to crypt depth ration in jejunum and illum were not significantly affected by dietary treatments. The gene expression of ALT, AST and CyP 450 were significantly different between the treatments ($p < 0.05$). Based on the obtained result, Toxeat® could alleviate negative effects of aflatoxin on broiler chickens.

KeyWords: Toxeat®, Broiler, Aflatoxin, Performance, Gene expression, intestine Morphology