World Academy of Science, Engineering and Technology
International Journal of Biological and Ecological Engineering
Vol:18, No:02, 2024

The Investigation of Effectiveness of Different Concentrations of the Mycotoxin Detoxification Agent Added to Broiler Feed, in the Presence of T-2 Toxin, on Performance, Organ Mass and the Residues T-2 Toxin and His Metabolites in the Broiler Tissues

Authors : Jelena Nedeljković Trailović, Marko Vasiljević, Jog Raj, Hunor Farkaš, Branko Petrujkić, Stamen Radulović, Gorana Popvić

Abstract : The experiment was performed on a total of 99 one-day-old broilers of Cob 500 provenance, which were divided into IX equal groups. Broilers of the E-I group were fed 0.25 mg T-2 toxin/kg feed, E-II and E-III groups 0.25 mg T-2 toxin/kg feed with the addition of 1 kg/t and 3 kg/t of the mycotoxin detoxification agent MDA, respectively. The E-IV group received 1 mg of T-2 toxin/kg of feed, and the broilers of E-V and E-VI groups received 1 mg of T-2 toxin/kg of feed with the addition of 1 kg/t and 3 kg/t of the MDA detoxification preparation, respectively. The E-VII group received commercial feed without toxins and additives, the E-VIII and E-IX groups received feed with 1kg/t and 3kg/t of the MDA detoxification preparation. The trial lasted 42 days. Observing the results obtained on the 42nd day of the experiment, we can conclude that the change in the absolute mass of the spleen occurred in the broilers of the E-IV group (1.66±0.14)g, which was statistically significantly lower compared to the broilers of the E-V and E-VI groups (2.58±0.15 and 2.68±0.23)g. Heart mass was significantly statistically lower in broilers of group E-IV (9.1±0.38)g compared to broilers of group E-V and E-VI (12.23±0.5 and 11.43±0.51)g. It can be concluded that the broilers that received 1 kg/t and 3 kg/t of the detoxification preparation had an absolute mass of organs within physiological limits. Broilers of the E-IV group achieved the lowest BM during the experiment (on the 42nd day of the experiment 1879±52.73)g, they were significantly statistically lower than the BW of broilers of all experimental groups. This trend is observed from the beginning to the end of the experiment. The protective effect of the detoxification preparation can be seen in broilers of the E-V group, that had a significantly statistically higher BM on the 42nd day of the experiment (2225±58.81)g compared to broilers of group E-IV. Broilers of E-VIII group (2452±46.71) g, which received commercial feed with the addition of 1 kg/t MDA preparation, had the highest BMI at the end of the experiment. At the end of the trial on the 42nd day, blood samples were collected from broilers of the experimental groups that received T-2 toxin and MR detoxification preparations in different concentrations. Also, liver and breast musculature samples were collected for testing for the presence and content of T-2 toxin, HT-2 toxin, T-2 tetraol and T-2 triol. Due to very rapid elimination from the blood, no remains of T-2 toxin and its metabolites were detected in the blood of broilers of groups E-I to E-VI. In the breast muscles, T-2 toxin residues below LoQ < 0.2 (µg/kg) were detected in all groups that received T-2 toxin in food, the highest value was recorded in the E-IV group (0.122 µg/kg and the lowest in E -VI group 0.096 µg/kg). No T-2 toxin residues were detected in the liver. Remains of HT-2 were detected in the breast muscles and livers of broilers from E-IV, E-V and E-VI groups, LoQ < 1 (µg/kg); for the breast muscles: 0.054, 0.044 and 0.041 µg/kg, and for the liver: 0.473, 0.231 and 0.185 µg/kg. Summing up all the results, a partial protective effect of the detoxification preparation, added to food in the amount of 1kg/t, can be seen.

Keywords : T-2 toxin, bloiler, MDA, mycotoxuns
Conference Title : ICMPT 2024 : International Conference on Mycotoxins, Phycotoxins and Toxicology
Conference Location : Sydney, Australia
Conference Dates : February 26-27, 2024