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## Performance, Egg Qualities and Blood Profile of Laying Hens Fed Mould Contaminated Diets Supplemented with Three Mycotoxin Adsorbents

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### Abstract

A study was conducted to investigate the effect of activated charcoal (AC) and two commercial mycotoxin adsorbents (CA1 and CA2) on performance, egg qualities and blood profile of layers fed on mould-contaminated feed. There were eight dietary treatments, diets 1 to 4 contained uninfected maize supplemented with: no adsorbent (NA), AC, CA1 or CA2. Diets 5 to 8 contained infected maize with the supplementation as stated for diets 1 to 4 in a 2 × 4 factorial arrangement, (two types of maize: uninfected and infected and four types of supplements: NA, AC, CA1 and CA2). There were five different fungi isolated from infected maize grains. The fungi were identified as *F. oxysporum*, *Rhizopus stolonifer*, *Aspergillus flavus*, *A. fumigatus* and *A. parasiticus*. The activities of the fungi depleted the organic component protein and lipid contents and the caloric value of the maize grains by 23%, 51% and 4.5% respectively, while compensating in terms of high inorganic elements such as total ash, Ca, K and Mg. The mould-contaminated diets significantly ( $p < 0.05$ ) decreased body weight gain (BWG) and hen day production (HDP) while egg qualities and feed intake were not significantly ( $p > 0.05$ ) affected. There were considerable reduction ( $p < 0.05$ ) in haematological indices (RBC, Hb, and mean corpuscular measurements: MCV, MCH and MCHC) in birds subjected to contaminated diets. There were higher ( $p < 0.05$ ) retention of urea and creatinine in the blood of birds on contaminated diets. Similar pattern were observed for liver enzymes, ALT and AST. The addition of the three adsorbents in contaminated diets improved BWG and HDP, but only AC compared closely ( $p > 0.05$ ) with birds on uninfected diets. AC showed superiority in counteracting the effect of fungi metabolites on haematological and serum composition of the experimental birds. The results indicated that fungi metabolites in contaminated feed retard growth, egg production, conversion efficiency of the birds and some blood constituents whereas the addition of AC, CA1 or CA2 prevents the adverse effects of mycotoxins to varying extents, with activated charcoal being the most effective adsorbent treatment in this study.

**Keywords:** Blood profile, egg qualities, laying chickens, mycotoxin adsorbent, performance