Anticoccidial effect of apple cider vinegar on broiler chicken: an organic treatment to measure anti-oxidant effect

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Abstract

The objective of this study was to investigate the anticoccidial effect of apple cider vinegar added to drinking water with the anticoccidial effect of amprolium to feed broiler chicken. The study has adopted an observational approach to evaluate the anticoccidial effect of apple cider vinegar on broiler chicken. The antioxidative changes were measured adding natural apple cider vinegar to drinking water. Four hundred and fifty broiler chickens were purchased from the local market and distributed into three groups (T⁺vc: positive control, T⁻vc: negative control, Tᵥ: apple cider vinegar) with 150 chickens in each group. The three groups were further replicated into 3 blocks each containing 50 chickens. The groups were fed balanced diet, amprolium was added to the feed of positive control group, and apple cider vinegar was added to the water of Tᵥ group. Measurements of the different variables were started from week 3, at the end of each week 3 birds were chosen randomly, blood samples were collected via the wing vein, and fecal oocysts were counted from intestinal contents of each individual bird using the McMaster technique. Broiler in the control groups T⁺ve and T⁻ve showed clinical signs of coccidiosis (blood in feces) and the number of coccidial oocytes in feces increased with time. In the vinegar group, no clinical signs of coccidiosis were observed. Concentrations of total antioxidants and catalase enzyme activity significantly increased (p≤0.05); while malondialdehyde concentration significantly decreased (p≤0.05).

Keywords: apple cider vinegar, broilers, coccidial oocytes, feed, diet, disease

Introduction

Coccidiosis has been attributed to the loss of about 1 to 3 billion dollars annually, on the global record within the poultry industry (Muthamilselvan et al. 2016, Cardenas et al. 2017). Avian coccidiosis is characterized as an infectious protozoan disease, caused by gut parasites of the genus *Eimeria* (Williams 2005, Muthamilselvan et al. 2016). These parasites are transmitted into the body via oral route and multiply within mucosal epithelia in different parts of the gastrointestinal tract. As a result, they may lead to the gut damage along with other conditions like inflammation, haemorrhage, diarrhoea, morbidity, and mortality in poultry. This disease annually causes a global loss of over 2.4 billion US dollars in the poultry industry, accompanied with...