Abstract: The aim of this study was to evaluate the effect of formulations of vitamin K, organic acids, essential oils and plant hydroalcoholic extracts as anticoccidial alternatives in broilers. A 34-day cage trial with 10 replicates of 12 birds/cage was conducted. Male broilers (Ross 308) were randomly assigned to: 1) non-infected (NI); 2) Eimeria-infected (EI); 3) EI+decoquinate/zoalene shuttle program (DZ); 4) EI+2 kg/t Nutri-Gro® feed additive; 5) 3 L/1000 L Technocok® in drinking water from d14 to d20. The formulations were made by Synergie Eurobec International Ltd and contain 7.0 and 7.5 g/kg vitamin K. Eimeria infection was induced by an oral administration at d14 of 2x10^5 sporulated oocysts of mixed Eimeria species from field isolates. Data were analyzed by a mixed model including treatment and barn section as fixed and random effects, respectively, and by Kruskal-Wallis tests. As expected, the coccidian challenge (EI) reduced growth performances, increased total excreted oocyst counts (6.0 vs 3.0 log_{10}, P < 0.0001) and E. acervulina (0.79 vs 0.21, P=0.0022) and E. tenella (2.04 vs 0.17, P < 0.0001) intestinal lesion scores (ILS) 6 days post infection (dpi, d20), compared to NI, whereas DZ palliated these infection impacts. The two formulation treatments increased d20 body weight (BW), compared to EI (0.980 and 0.939 vs 0.908 kg, P < 0.01), without improving the feed conversion ratio (FCR). The 2 kg/t Nutri-Gro® formulation increased (2.69 vs 2.61 kg, P=0.0486) and the Technocok® showed a trend to improve (2.68 vs 2.61 kg, P=0.1015) d34 BW, compared to EI birds. However, the formulations did not affect the oocyst excretion nor the ILS at 6 dpi (P>0.05). Overall, the additives showed beneficial effects on growth performance in a Eimeria-challenged broilers. These supplements may be involved in a strategy aimed at reducing the use of anticoccidials in broiler production.

Keywords: conventional production, vitamins, organic acids