

17. Effects of the inclusion of a synergistic combination of phytogenics on productive performance, coccidiostatic activity and intestinal integrity in broiler diets infected with *Eimeria tenella* from 0 to 42 days of age

*I. AÑOVER-AYUSO *, A. MUÑOZ-LUNA, and J.D. BERROCOSO*

*Universidad de Murcia, Department of Animal Production, Calle Santo Cristo, 1, 30001 Murcia, Spain *email: ines.anovera@um.es*

A total of 672 one-day-old male Ross 308 chickens were used in a 2x4 factorial experimental design with 4 different treatments and two coccidia challenge levels: infected and non-infected. There 4 dietary treatments: a positive control (PC) group supplemented with a commercial coccidiostat at a dose of 500 ppm (sodium monensin); a non-supplemented negative control (NC) group; treatment 1 (T1) supplemented with triterpenic acid extract and saponin extract (800 and 130 ppm, respectively) and treatment 2 (T2) supplemented with garlic extract and saponin extract (150 and 60 ppm, respectively). The experimental unit was the pen (15 birds/pen) and each treatment was replicated 8 times. At day 14 of age half of the barn was infected with an oral inoculum of 10.000 oocyst of *E. tenella* per chicken to trigger an experimental infection. In the whole period (0 to 42 days of age) the PC group had the best average daily weight gain, which was similar to the T1 group and higher than the mean of NC and T2 groups (83.95 vs. 81.07 vs. 78.77 g; $P<0.01$). There were no differences in the average daily feed intake, meanwhile the feed conversion ratio was the best in the PC group, which was also similar to the T1 group and better than the mean of T2 and NC group (1.479 vs. 1.492 vs. 1.545 g/g; $P<0.05$). There were no differences between non infected and infected boxes. The quantification of DNA copies of *E. tenella* on samples of faeces taken at day 21 and 28 from infected boxes didn't show any difference between groups. However, the count at day 28 was significantly lower than at day 21. The quantification of TGF- β and β -interferon in jejunum samples taken at day 21 and 28 showed from infected boxes at day 21 that TGF- β was higher in the PC group than the NC group, and β -interferon was higher in the PC group than the T1 group. At day 28, the only difference was found in TFG- β , which was higher in the NC group than the T1 group. The quantification was also significantly higher at day 28 compared to day 21. It can be concluded that the PC group had the best productive results on the overall period, only matched by the T1 group statistically. In addition, results of *E. tenella* DNA copy-count on faeces and intestinal integrity parameters quantification showed an improvement on the intestinal health from day 21 to day 28, indicating that the animals were able to recover optimally in all groups. However, further research is needed to find whether a combination of the two mixtures used can enhance their beneficial effects.

Keywords: coccidiosis; chickens; garlic; saponins; triterpenic acids