P328 Effect of essential oil based eubiotic product in improving performance and reducing intestinal lesions as well as mortality in broiler birds under necrotic enteritis challenge

V. A. Kuttappan[1], G. F. Mathis[2], F. Yan[1], J. Chen[1], M. Vazquez-Anon[1]

[1]Novus International, Inc., St Charles, MO, United States; [2]Southern Poultry Research, Inc., Athens, GA, United States

Necrotic enteritis is one of the major gut health challenges causing huge economic loss to modern poultry producers as a result of removal of antibiotic growth promoters (AGP) from feed formulations. Clostridium perfringens is the causative organism of necrotic enteritis, while coccidiosis is a major predisposing factor. Among the alternatives for AGP, essential oils are widely used to reduce the severity of necrotic enteritis. Several studies have shown that essential oils could have a direct antimicrobial effect on C. perfringens and also reduce the Eimeria oocyst excretion in birds with coccidiosis. Previous studies have shown that thymol and carvacrol based product NEXT ENHANCE® 150 (NE150) can improve performance in birds with coccidiosis, by modulating the immune/inflammatory response. The objective of the current study was to explore the effect of NE150 in birds challenged with necrotic enteritis. The study included a CON or no additive group, NE150 (30g/MT of feed), and BMD60 (Bacitracin Methylene Disalicylate® @ 500g/MT of feed). All birds were raised in battery cages (8 replicates/treatment; 8 birds/replicate) and challenged with Eimeria maxima (~5,000 oocysts/bird) at 14d followed by C. perfringens (~108 cfu/bird) at 19, 20, and 21d of age. Results from the study revealed that NE150 resulted in reduction ($P<0.05$) of feed conversion ratio (FCR) post challenge when compared to CON, while BMD60 showed lower ($P<0.05$) FCR than both CON and NE150. Furthermore, necrotic enteritis lesions and mortality were similar between both NE150 as well as BMD60, and were lower ($P<0.05$) than CON. In conclusion, the results from the study suggest that the essential oil product NE150 was effective in improving performance in broiler birds under necrotic enteritis challenge, mostly by reducing mortality and lesions, and could be used as an effective alternative to AGPs. It is hypothesized that its mode of action could be by reducing the tissue damage caused by C. perfringens and/or coccidia and by modulating the host immune/inflammatory response to the infection.

Key Words: necrotic enteritis, AGP, essential oils, Clostridium perfringens, BMD60