

## News &amp; Comments

**Diet Supplement: Microbial Feed Supplement (MFS) reduced Mortality Attributable to Necrotic Enteritis***Tao Pan*

An intestinal illness in broiler chickens called Necrotizing Enteritis (NE) is linked to higher rates of morbidity and mortality. It is widely acknowledged that the gram-positive, anaerobic bacteria *Clostridium perfringens* is the main cause of NE. Clinical instances of NE frequently feature intestinal lesions and have been found to have abnormally high flock death rates that surpass 10%. A milder type of this illness can decrease feed efficiency and growth performance. During a NE outbreak, antibiotics such as bacitracin methylene di-salicylate efficiently cure intestinal infections caused by *C. perfringens*, reducing flock mortality and enhancing growth performance. The FDA implemented the Veterinary Feed Directive in 2017, limiting the use of antibiotics by food animal producers. This was another action taken by the US government. Numerous large poultry producers have voluntarily withdrawn antibiotics from their broiler chicken feeding programs as a result of these and other causes.

This research looked at how well broilers responding to a NE challenge responded to a novel microbial feed supplement made up of native GI chicken bacteria. From the gut microbiome of healthy broiler chickens, two strains of bacteria, *Hungatella xylanolytica* ASUCSBR21 and *Clostridium beijerinckii* ASUCSBR67 were chosen and isolated to axenicity.

On the day of hatching, 540 Cobb 500 male broiler chickens were separated into three treatment groups (each group contained 180 chickens), and they were then placed in concrete floor enclosures. Each treatment group in Trial 1 included six pens with a total of 30 birds in each. On the day of hatching, 312 Cobb 500 male broiler chickens from each of the three treatment groups (336 chickens overall) were put into concrete floor pens for Trial 2. Each treatment group in Trial 2 had 12 pens with 26 birds each. Five birds were randomly selected from each pen on study days 21 and 28, weighed, and then put to death by cervical dislocation. R software was used to evaluate each trial's data (version 3.5.1).

The supplemented strains' potential multiple mechanisms of action could be a contributing factor to the decreases in NE mortality observed in this investigation. Live bacterial strain supplementation has been found to have an impact on hosts and their microbiomes in the past. Boosting human immunity, enhancing intestinal barrier function, and encouraging a better intestinal balance of helpful microbes are just a few of the potential paths the supplemented microorganisms took to alleviate NE. During



Trial 1, the MFS had no discernible effects on body weight increase, feed consumption per bird, or adjusted FCR. However, for the MFS group, adjusted FCR was numerically lower for each period. In Trial 2, the MFS supplemented group showed a 4-point FCR decline throughout the trial compared to the POS group ( $p = 0.01$ , [Table 3](#)). The MFS group's performance improved in both trials, and it got better more and more at the conclusion. By the second half of Trial 1, there was a noticeable variation in pen density across groups as a result of the different rates of death during the challenge phase.

This shows that it is possible to extract novel microbial therapies from the gut microbiome of broiler chickens and that these MFS may be able to sustain or enhance bird performance even amid illness outbreaks. These preliminary studies offer key data for further investigation into the use of these natural microbes to enhance broiler health and performance when confronted with NE.

#### **JOURNAL REFERENCE**

Andrew Izzo, Grant Gogul, Josh Lefler, Allison Wells, James Gaffney, Jennifer Cao, Norman Pitt, Brian Dirks and Mallory Embree, 2022. Efficacy of a Novel, Native Microbial Feed Supplement on the Mitigation of Necrotic Enteritis in Cobb 500 Broiler Chickens. *Int. J. Poult. Sci.*, 21: 57-64.

#### **KEYWORDS**

Broiler, necrotic enteritis, *Clostridium perfringens*, microbial feed supplement, mortality

