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POULTRY RESEARCH BULLETIN 13

The effect of Naverde Plus on growth performance and necrotic enteritis challenge mitigation in 1-to 28-day-old broiler chicks

INTRODUCTION

Necrotic enteritis causes high mortality in chickens and turkeys. Poultry with the disease most often present with depression, ruffled feathers, diarrhea, and intestinal lesions. The primary cause of necrotic enteritis is abundant *Clostridium perfringens* in the intestine along with a co-infection of *Coccidia*. Additionally, some feedstuffs that increase bacterial growth or slow the rate of feed passage in the intestine, can increase the incidence of necrotic enteritis.

Preventing necrotic enteritis is important to the poultry industry, and with the decreased use of antimicrobials, other means of preventing the disease are needed. Thus, maintaining a healthy gastrointestinal tract and controlling coccidiosis are essential for preventing necrotic enteritis. The complex carbohydrates and saponins in Naverde Plus can be used in a necrotic enteritis prevention program. Naverde Plus' blend of complex carbohydrates, nucleotides, and peptides can reduce enteric pathogen challenges and lower gut inflammation, while saponins from *Quillaja* and *Yucca* have anticoccidial activity that can reduce oocyst attachment and decrease the severity of intestinal lesions caused by *Coccidia*.

METHODS

► Three hundred eighty-four, Ross 308 x Hubbard male day-of-hatch broilers were randomly allotted to treatment groups:

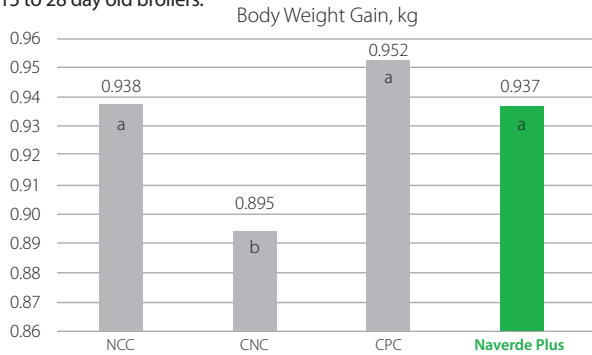
Treatment Name	Treatment	Challenge
NCC	Non-challenged control	No
CNC	Challenged negative control	Yes
CPC	Challenged positive control (Coban 90, Elanco, 110 g/ton)	Yes
Naverde Plus	180 g/ton	Yes

There were 12 replicate cages per treatment with eight chicks per cage. All chicks were vaccinated at a commercial hatchery using commercial hatchery standards and vaccination programs, except for coccidiosis. Chicks were fed a standard starter diet from day 1 to 14 and a standard grower diet from day 14 to 28, including their respective feed additives. On day 14 the challenged treatment groups were administered a 10X live *Eimeria* vaccine (Advent, Huvepharma) via oral gavage. The non-challenged treatment group was given distilled water via oral gavage. On days 16 and 17, following a five-hour feed withdrawal, feed was contaminated with 7.7×10^7 CFU/mL Net B *Clostridium perfringens* in the challenged treatment groups. Birds and feed were weighed on days 1, 14, and 28. On day 28, one random bird per pen was evaluated for intestinal lesions.

RESULTS

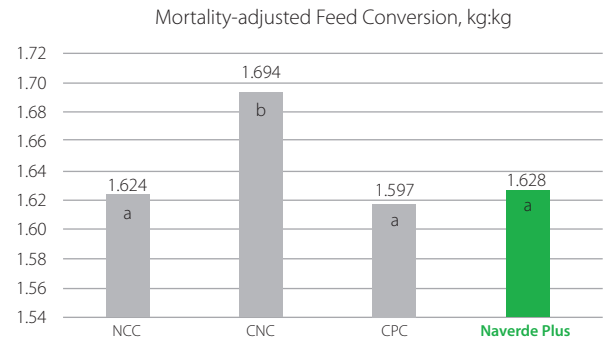
► From day 1 to 14, prior to the challenge, body weight gain, feed conversion ratio, and percent mortality were similar ($P>0.05$) across all treatment groups (data not shown). After the necrotic enteritis challenge, chicks in CNC treatment group had reduced body weight gain ($P<0.05$; Figure 1) and poorer FCR ($P<0.05$; Figure 2) than chicks in the NCC, CPC, or Naverde Plus treatment groups. For the entire trial (days 1 to 28), chicks in the CNC treatment group had decreased ($P<0.05$) body weight gain (Figure 3), poorer ($P<0.05$) feed conversion ratio (Figure 4), and lower ($P<0.05$) body weights (Figure 5) than chicks in the NCC, CPC, or Naverde Plus groups. There was no effect of treatment on duodenal or cecal lesions on day 28. Broilers in the CNC had more severe jejunum and ileum lesions than broilers in the NCC, CPC, or Naverde Plus treatment groups, while lesion scores were similar in these three treatment groups. Overall, chicks fed Naverde Plus had similar growth performance and intestinal lesion scores as chicks fed the CPC.

Figure 1. The effect of Naverde Plus on average daily gain of 15 to 28 day old broilers.*



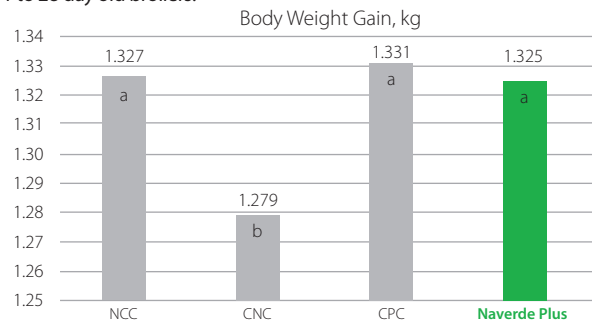
*Data are means of 12 replicates per treatment. NCC = non-challenged control; CNC = challenged negative control; CPC = challenged positive control.
^{ab}Data with different superscripts are different ($P<0.05$).

Figure 2. The effect of Naverde Plus on feed conversion ratio of 15 to 28 day old broilers.*



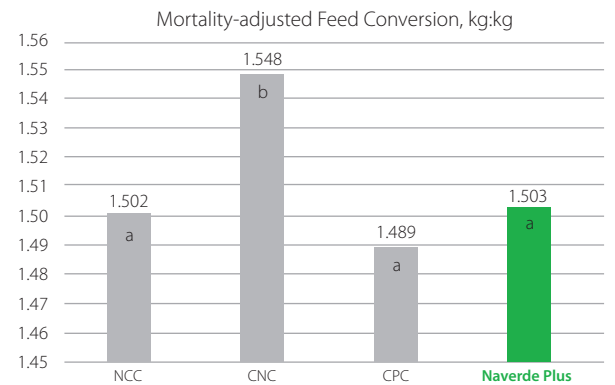
*Data are means of 12 replicates per treatment. NCC = non-challenged control; CNC = challenged negative control; CPC = challenged positive control.
^{ab}Data with different superscripts are different ($P<0.05$).

Figure 3. The effect of Naverde Plus on body weight gain of 1 to 28 day old broilers.*



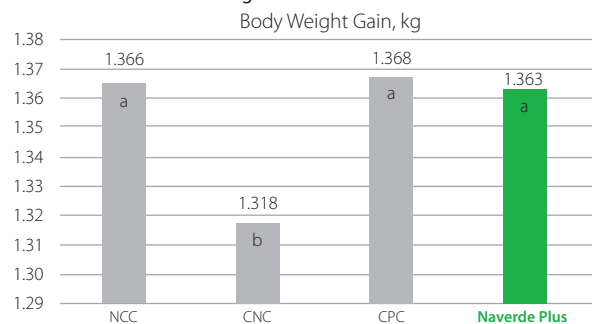
*Data are means of 12 replicates per treatment. NCC = non-challenged control; CNC = challenged negative control; CPC = challenged positive control.
^{ab}Data with different superscripts are different ($P<0.05$).

Figure 4. The effect of Naverde Plus on feed conversion ratio of 15 to 28 day old broilers in a necrotic enteritis challenge.*



*Data are means of 12 replicates per treatment. NCC = non-challenged control; CNC = challenged negative control; CPC = challenged positive control.
^{ab}Data with different superscripts are different ($P<0.05$).

Figure 5. The effect of Naverde Plus on body weight of 28 day old broilers in a necrotic enteritis challenge.*



*Data are means of 12 replicates per treatment. NCC = non-challenged control; CNC = challenged negative control; CPC = challenged positive control.
^{ab}Data with different superscripts are different ($P<0.05$).

IMPLICATIONS

Naverde Plus can be utilized to improve growth performance and immune function of broilers, as well as reduce the severity of intestinal lesions, in a necrotic enteritis challenge. These data demonstrate significant resilience of broiler chicks fed Naverde Plus and faced with a necrotic enteritis challenge.



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