

Probiotic *Bacillus licheniformis* Prevent Necrotic Enteritis and Improve Performance in Broiler Chickens

Lund, B., Jensen, M.M. & Knap, * I.
Chr. Hansen A/S, Hørsholm, Denmark

Introduction and objectives

Clostridium perfringens, causes Necrotic enteritis (NE) in poultry resulting in substantial losses in broiler production.

Studies with GalliPro®Tect (*Bacillus licheniformis*, DSM17236) were conducted to investigate
1. the effect on NE in *C. perfringens* challenge studies
2. effect on performance parameters under non challenged commercial production conditions.

Methods

Challenge study: At the Southern Poultry Research, Inc US, following the findings of two battery challenge studies, a floor pen *C. perfringens* challenge study was performed. 1750 day-old male Cobb X Cobb were assigned to 5 treatments x 7 replicate pens. Treatments are summarised in the table. Birds were challenged with 1×10^8 CFU/g *C. perfringens* on days 18-20. Weight gain, feed consumption, feed conversion, lesion scores and mortality were reported.

Non-challenge study: Finally an efficacy study at the Lithuanian Institute of Animal Science, using 910 day old Ross 308, assigned to 2 treatments x 7 replicates of 65 birds/pen was conducted. Non-control treatment birds received GalliPro®Tect WS, a dosage equivalent to 1.6×10^7 CFU/g *B. licheniformis* per bird via the drinking water on day 11-21. Weight gain, feed conversion and mortality were reported.

Results

Some of the results are shown in the graphic presentations.

Discussion

Challenge study:

- Significant effects ($P < 0.05$) in on lesion score and mortality - and weight gain and FCR (not shown here)
- No significant difference compared to Virginiamycin treatment with regard to mortality & lesion scores

Non challenge study:

- Improving FCR by 2.6% and live weight by 7% ($P < 0.01$) in non challenged birds administered
- Mortality %, two times lower and number of birds dead due to NE, six times lower in broilers receiving the probiotic GalliPro®Tect WS via drinking water

Conclusion

B. licheniformis (DSM17236) GalliPro®Tect in a dose of 1.6×10^6 CFU/g seems to be optimal to prevent necrotic enteritis under mild challenge commercial conditions.

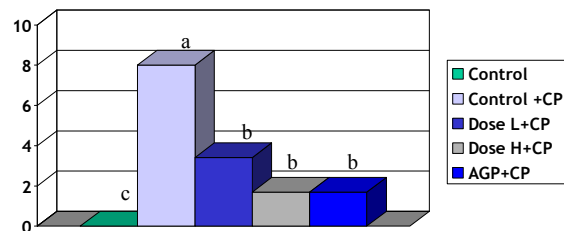
B. licheniformis (DSM17236) GalliPro®Tect acts as a "natural" alternative solution to antibiotic growth promoters when applied in feed or in water under non challenged commercial conditions.

Floor pen challenge study

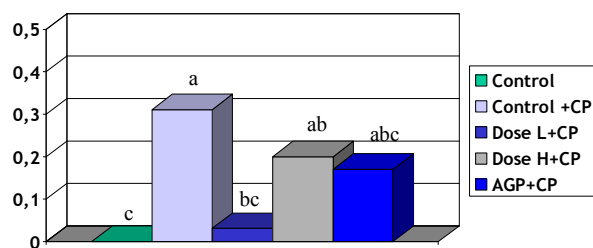
		<i>B. licheniformis</i>	<i>C. perfringens</i> 1×10^8 CFU/g
T1 (Control)	Nonmedicated, Noninfected	-	-
T2 (Control + CP)	Nonmedicated, Infected	-	Day 18-20
T3 (Dose L + CP)	<i>Bacillus licheniformis</i> 1.6×10^6 CFU/g	Day 0-42	Day 18-20
T4 (Dose H + CP)	<i>Bacillus licheniformis</i> 1.6×10^7 CFU/g	Day 0-21	Day 18-20
T5 (APG + CP)	Virginiamycin 15 g/t	Day 0-42	Day 18-20

Floor Pen Challenge Study - Mortality%, Day 0-42:

All treatments reduced mortality from 8% to 2-3% point in challenged birds. (Significance $P < 0.05$)



Floor Pen Challenge Study - Necrotic Enteritis lesion Score, Day 22: NE Score (0-3). (Significance $P < 0.05$)



Non-Challenge Floor Pen Study at Lithuanian Institute of Animal Science: Live weight (kg)

The overall mean weight for treated birds 2255 g vs control group 2110 g. (Significance $P < 0.01$)

