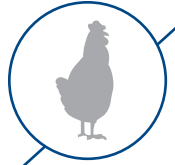


Research Notes P-47

Arm & Hammer Animal Nutrition



Study compares performance of broilers supplemented with CELMANAX, Direct Fed Microbial or Both

CELMANAX™ is a multicomponent, all-natural feed supplement containing Refined Functional Carbohydrates™ (RFC™) that has Generally Recognized as Safe (GRAS) status as a feed ingredient.

STUDY OVERVIEW

- The study was designed to test the effects of CELMANAX and a direct-fed microbial (DFM) product on growth performance, ileal digestibility and intestinal development in broiler chicks.
- 72 male broilers, up to 28 days of age, were housed individually and randomly assigned to one of four treatments with 18 replicates/treatment:
 - Control diet: No antibiotic with coccidiostat
 - Control diet plus CELMANAX at 1 kg/MT
 - Control diet plus DFM (*Bacillus subtilis*) at 125 g/MT
 - Control diet plus CELMANAX at 1 kg/MT and DFM at 125 g/MT
- All birds were weighed at 29 and 42 days of age.
- Chromic oxide was added as an internal marker and total feces were collected in the last 4 days to determine nutrient retention.
- Ileum content was collected from 3 broilers per treatment and pooled to test for ileal digestibility.
- Duodenal sample was collected from 8 broilers/treatment to analyze intestinal morphology. Carcass yields were gathered at the conclusion of the study.

RESULTS

- CELMANAX supplemented broilers experienced increased weight gain, body weight and breast yield.
- The inclusion of the DFM improved feed intake, weight gain, body weight, carcass yield and breast and leg weight.
- The effects of CELMANAX and the DFM were not additive, so there was no benefit seen of adding both the DFM and CELMANAX.
- Feed efficiency was significantly higher in the groups supplemented with CELMANAX compared to all other treatments.
- A trend for improved ileal digestibility and improved intestinal morphology was observed with CELMANAX supplementation.

CONCLUSION

- The effects of feeding CELMANAX and the DFM were not additive. In general there was no benefit to the addition of both CELMANAX and DFM.
- Birds supplemented with CELMANAX increased weight gain, feed efficiency, ileal digestibility and intestinal morphology compared to the control group.

TABLE 1		Production performance, carcass weight & yield	
Parameter	Control	CELMANAX™	
Feed intake, g/day	130.70	129.04	
Weight gain, g/day	76.97 ^e	79.12 ^f	
Feed efficiency (Gain/Feed)	0.59	0.62	
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Carcass weight, grams	1130.00	1149.00	
Breast weight, grams	430.00 ^e	446.00 ^f	
Leg weight, grams	193.00	197.00	
Thigh weight, grams	315.00	320.00	
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Carcass yield, %	52.40	53.10	
Breast yield, %	19.90 ^a	20.60 ^b	
Leg yield, %	8.90	9.00	
Thigh yield, %	14.50	14.80	

TABLE 2		Nutrient ileal and retention	
Parameter ileal	Control	CELMANAX	
Dry matter ileal digestibility, %	76.61	78.46	
Ash ileal digestibility, %	68.82	71.80	
Nitrogen ileal digestibility, %	83.97 ^e	85.71 ^f	
Energy ileal digestibility, %	79.01	80.73	
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Dry matter retention, %	58.21	60.04	
Ash retention, %	14.88	20.01	
Nitrogen retention, %	32.39 ^a	40.37 ^b	
Energy intake, Kcal	418.70	417.80	
Energy excretion, Kcal	138.76 ^e	132.23 ^f	
EMAn, Kcal/kg	2724.00	2755.00	

TABLE 3		Intestinal morphology	
Parameter	Control	CELMANAX	
Mucosa thickness, mm	161.10	166.40	
Villi height, mm	146.40	151.50	
Villi width, mm	15.30	15.40	
Crypt depth, mm	9.30	10.00	
Crypt width, mm	7.60 ^e	8.00 ^f	
Villi area, mm ²	1114.00	1165.00	
Ratio villi height/crypt depth	15.75	15.15	

Tables 1 – 3:

^{a,b} indicates $P < 0.01$

^{c,d} indicates $P < 0.05$

^{e,f} indicates $P < 0.10$



Animal Nutrition

Gómez S, Angeles ML, Mojica MC, Jalukar S. Combination of an Enzymatically Hydrolyzed Yeast and Yeast Culture with a Direct-fed Microbial in the Feeds of Broiler Chickens. *Asian-Aust J Anim Sci* 2012;25(5):665–673.

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