Victus®

Victus® Broiler compared to Competitor Enzyme for Broiler Performance

Across various growout conditions, a 21-trial summary shows Victus Broiler to improve body weight and feed conversion rate (FCR) by 0.42% and 1.22%, respectively, while reducing feed costs/lb live weight by 2.7%. The enzymes in Victus Boiler were strategically chosen to consistently recoup more energy, phosphorus (P), calcium (Ca) and amino acids (AA) from corn and soybean-meal (SBM) based feeds.

Objective

This trial compared Victus Broiler to an enzyme product with carbohydrases and a phytase source claimed to provide approximately twice the phytase activity as does Victus Broiler.

Methods

Cobb male chicks were fed treatment diets in three stages to 42-days of age: starter (0 – 14 days), grower (15 – 28 days) and finisher (29 – 42 days). At the end of each phase, birds were weighed and feed intake was determined. There were 23 birds/pen and each treatment was replicated 12 times. A total of 1,104 birds was represented in four treatments:

- Positive control (PC)
- Negative control (NC) (PC with reduced nutrient levels; see table)
- Negative control + Victus Broiler
- Negative control + competitive enzyme product

Diets

The diets were corn/SBM-based with 3% DDGS and 2% meat and bone meal. The PC diet was formulated to be similar to Cobb 500 nutritional recommendations while the NC was decreased in metabolizable energy (ME), protein, AA, P, Ca, and Na as noted in Tables 1-3. The nutritional reductions in the PC exceeded the recommended matrix for Victus Broiler. A common NC diet was formulated to which the enzyme products were added to sub-batches. At the expense of corn, Victus Broiler and the competitor enzyme products were added at a level as recommended.

Table 1. Ingredient composition of diets

	Starter		Grower		Finisher	
	PC	NC	PC	NC	PC	NC
Corn	58.30	63.49	61.59	65.34	62.62	67.74
SBM UGA	28.80	26.47	25.10	24.05	23.34	21.45
Soybean Oil	3.33	0.94	4.10	1.93	5.16	2.43
DDGS	3.00	3.00	3.00	3.00	3.00	3.00
Meat & Bone	2.00	2.00	2.00	2.00	2.00	2.00
Dical P	1.44	0.42	1.35	0.32	1.15	0.13
Ca Carbonate	0.81	1.24	0.65	1.08	0.64	1.07
Vitamin Mix	0.57	0.57	0.57	0.57	0.57	0.57
Sand	0.50	0.50	0.50	0.50	0.50	0.50
DL-Met, 99%	0.38	0.39	0.37	0.35	0.29	0.29
L-Lys HCl	0.34	0.33	0.28	0.26	0.23	0.22
Salt, NaCl	0.21	0.23	0.21	0.22	0.24	0.24
L-Thr	0.19	0.17	0.14	0.11	0.11	0.09
TM Mix	0.08	0.08	0.08	0.08	0.08	0.08
Coban 90	0.05	0.05	0.05	0.05	0.05	0.05
Choline-Cl	0.02	0.02	0.02	0.02	0.02	0.02
S-Carb	--	0.10	--	0.11	--	0.13

Table 2. Nutrient composition of diets

	Starter		Grower		Finisher	
Nutrient (%)	**PC**	**NC**	**PC**	**NC**	**PC**	**NC**
CP	20.54	19.87	18.75	18.50	18.46	18.0
ME, kcal/lb	1375	1335	1410	1365	1445	1395
P avail	0.47	0.28	0.42	0.23	0.38	0.19
Ca	1.00	0.85	0.85	0.70	0.78	0.63
Lys	1.18	1.14	1.08	1.04	1.00	0.96
Meth	0.61	0.60	0.53	0.52	0.55	0.53
TSAA	0.86	0.85	0.77	0.76	0.78	0.76
Thr	0.82	0.78	0.72	0.68	0.66	0.62
Arg	1.16	1.11	1.05	1.03	1.03	1.00
Iso	0.73	0.70	0.67	0.65	0.65	0.61
Val	0.83	0.81	0.76	0.76	0.75	0.74

Table 3. Nutritional difference between positive and negative control diets

	Starter		Grower		Finisher	
Nutrient (%)	**PC**	**NC**	**PC**	**NC**	**PC**	**NC**
CP	--	-0.67	--	-0.25	--	-0.46
ME, kcal/lb	--	-40	--	-45	--	-50
P avail	--	-0.19	--	-0.19	--	-0.19
Ca	--	-0.15	--	-0.15	--	-0.15
Lys	--	-0.04	--	-0.04	--	-0.04
TSAA	--	-0.01	--	-0.01	--	-0.02
Thr	--	-0.04	--	-0.04	--	-0.04
Iso		-0.03		-0.02		-0.04

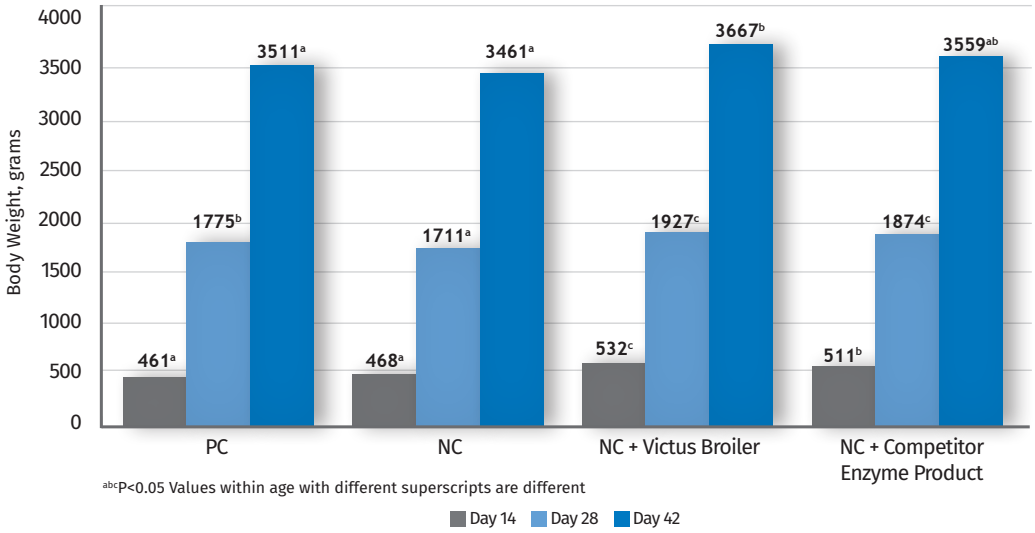
Results

Day 0 to 14 – Victus Broiler outperformed ($P < 0.05$) the NC diet for all variables measured (body weight (BW), BW gain and FCR) with the exception of mortality. The Victus Broiler-fed bird performance was superior ($P < 0.05$) to those fed the competitor enzyme product for BW and BW gain and FCR. The similar feed intake with improved gains and FCR indicates Victus Broiler-fed birds more effectively converted feed to performance. The NC and competitor enzyme product did not differ in FCR ($P > 0.05$). Mortality did not differ across treatments.

Day 0 to 28 – Birds fed Victus Broiler weighed more ($P < 0.05$) and converted feed more efficiently ($P < 0.05$) than NC. In addition, Victus Broiler-fed birds posted a significant ($P < 0.05$) improvement in FCR with a 2.9% heavier BW over the competitor enzyme product. As seen during the 14-day period, the NC and competitor enzyme product did not differ ($P > 0.05$) in FCR. Mortality did not differ across treatments.

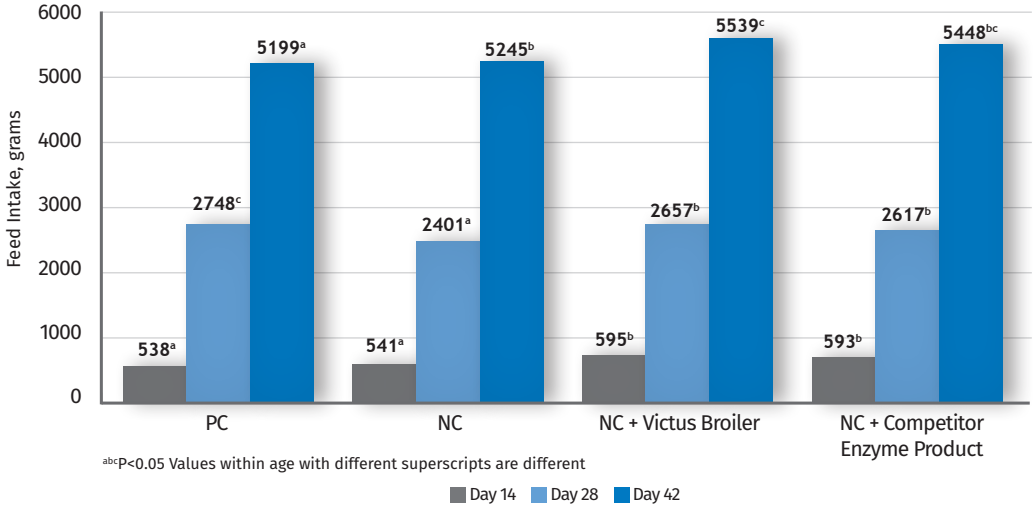
Day 0 to 42 – At the conclusion, Victus Broiler statistically outperformed the NC-fed birds in all respects. Victus Broiler-fed birds experienced an improved FCR ($P < 0.05$) over the competitor enzyme product with a BW that was more than 3% heavier. Mortality did not differ across treatments.

Figure 1. Body weight (grams) of broilers across treatments on day 14, 28 and 42



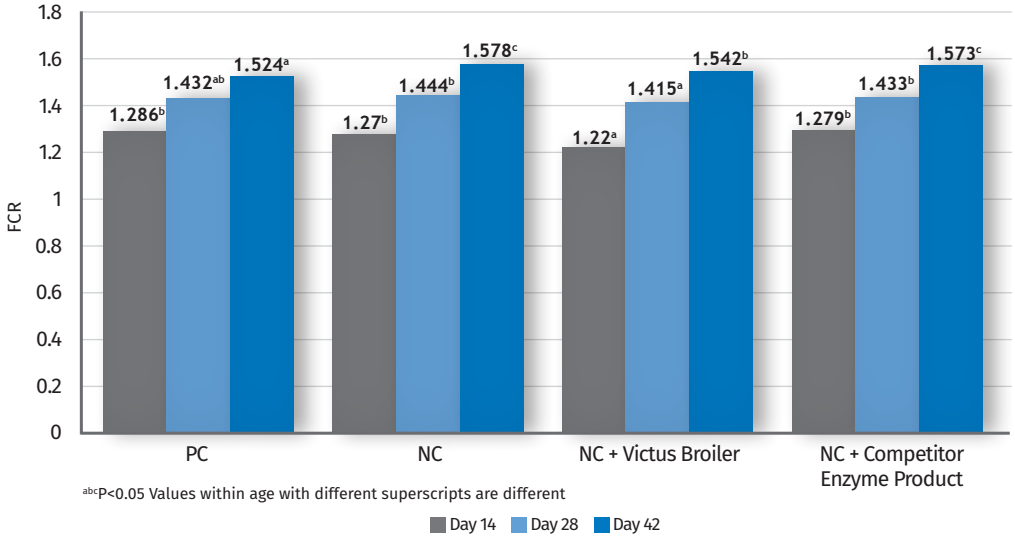
Victus Broiler significantly improved weight gain compared to positive control and negative control. Victus Broiler showed numeric improvements versus the competitive enzyme product.

Figure 2. Feed intake (grams) of broilers across treatments on day 14, 28 and 42



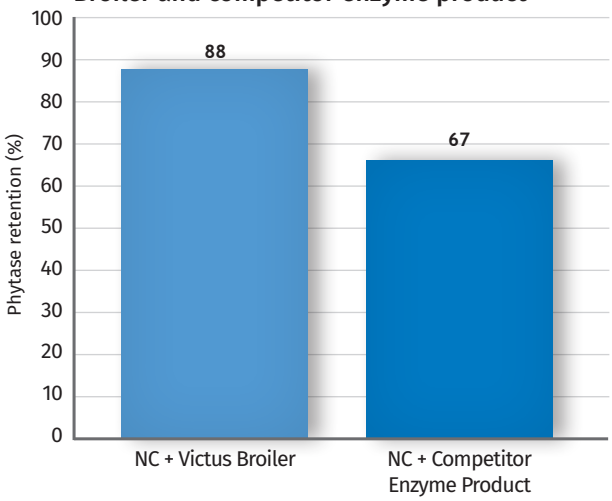
Victus Broiler improved feed intake compared to positive control and negative control, and was equal to the competitive enzyme product.

Figure 3. FCR of broilers across treatments on day 14, 28 and 42



Victus Broiler significantly improved feed conversion at day 14, 28 and 42 compared to the control groups and the competitive enzyme product.

Figure 4. Phytase retention (%) for Victus Broiler and competitor enzyme product[a]



[a]Represents the average feed phases

Victus Broiler retained nearly 90% of its enzyme product compared to 67% retention for the competitor.

Discussion

The superior performance of Victus Broiler over the competitor enzyme product could be due to at least three factors.

- Enzyme composition – Unlike the competitor, Victus Broiler contains carbohydrases for both corn and SBM. The competitor enzyme product does not address SBM, which can contribute nearly 70% of the total indigestible fiber polysaccharides in the starter feed. In addition, debranching enzymes in Victus Broiler elevate the effectiveness of the primary carbohydrases.
- Phytase stability – Feed sample analysis reveals HiPhos™ phytase retention was 88% across feed phases, while the respective competitor survivability was 67%. This difference is a 31% advantage with HiPhos phytase, a trait that continues to separate HiPhos from most other commercial phytases. A loss in phytase represents a significant difference in the P uplift from HiPhos.
- Phytase efficacy – The competitor phytase may not be as efficacious as HiPhos, and in addition to demonstrated poorer stability, the effective amount of phytase could be significantly lower. There has been no trial work to confirm the efficacy of this phytase against HiPhos.

The combination of these inefficiencies for phytase could have been exacerbated with a group of enzymes that were less-than-optimal for both corn and SBM.

Conclusion

When added to a NC diet with substantial reductions in ME, P, Ca, Na and amino acids, Victus Broiler was superior for broiler performance when compared to a competitor enzyme product containing carbohydrases and a phytase. The strategic enzymes in Victus Broiler recovered more energy, amino acids, P, Ca, and other components from commercial corn/SBM broiler feeds.