

Effects of different copper sources on growth performance of pigs from 28 to 105 lb.

Executive Summary

- Diets supplemented with Vistore™ Copper (Cu) or Intellibond® C were not statistically different for pig performance between the two copper sources (Table 1).
- Pigs fed **Vistore Copper** had numerically better growth performance (average daily gain (ADG) and feed conversion) compared to the other copper sources fed.
- Supplementation of 250 ppm and 125 ppm of copper did not significantly affect growth performance of pigs from 28 to 105 pounds.

Trial Objective:

To compare performance of **Vistore Copper** and Intellibond® C (Micronutrients, a Nutreco Company, Indianapolis, IN) supplements using high copper swine growing diets.

Materials and Methods:

- Pigs were weaned at approximately 21 days of age and then fed a common starter diet (20 ppm Cu) for 14 days
- 48 individually housed, commercial quality pigs, 12 head per treatment
- 28 barrows and 20 gilts were blocked by sex and body weight (BW)
- Average initial BW was 28.6 lb

- Pigs were fed in two, 26-day periods; 250 ppm Cu in phase 1 and 125 ppm Cu in phase 2
- Treatments included a negative control (9.9 ppm Cu diets with no additional supplemental Cu) and three copper diets: 1. copper sulfate (CuSO₄); 2. Intellibond C and 3. **Vistore Copper**
- Pigs and feeders were weighed weekly to determine ADG and average daily feed intake (ADFI)
- Feed conversions were calculated weekly
- Pig was the experimental unit and the statistical model contained the effects of diet, gender, replicate within gender and diet × gender interaction
- Performance variables measured included BW, ADG, ADFI and feed conversion
- One mortality and seven outliers were removed due to statistical analysis for outlier performance compared to performance means of other pigs within same treatment groups; one pig from the negative control, two from Intellibond C, three from **Vistore Copper** (1 of which was a mortality) and two from CuSO₄.

Results:

In this trial, Copper sources were compared using 3-week old weaned pigs over a 43-day testing period.

Vistore Copper was compared against the Intellibond C copper source. Performance data of **Vistore Copper** and Intellibond C for the trial are summarized in Table 1.

Table 1. Performance summary comparison of Intellibond C and Vistore Copper.

Variable	Body Weight		ADG		ADFI		Feed Conversion (lb. feed/lb. gain)	
	Int C	Vistore Cu	Int C	Vistore Cu	Int C	Vistore Cu	Int C	Vistore Cu
Treatment	Int C	Vistore Cu	Int C	Vistore Cu	Int C	Vistore Cu	Int C	Vistore Cu
n (observations)	10	9	10	9	10	9	10	9
Day 0	27.98	28.01						
Day 0 - 7	35.68	35.22	1.100	1.031	1.655	1.611	1.538	1.567
Day 7 - 14	45.97	45.91	1.470	1.526	1.971	1.993	1.348	1.339
Day 14 - 21	59.61	59.80	1.948	1.985	3.035	3.116	1.578	1.587
Day 21 - 26	69.69	69.59	2.017	1.958	3.407	3.454	1.708	1.797
Day 26 - 35	89.66	88.73	1.886	2.126	3.812	3.898	2.068	1.853
Day 35 - 43	105.04	106.95	2.298	2.279	4.526	4.581	1.986	2.013
Days 0 - 26			1.604	1.599	2.449	2.473	1.530	1.548
Days 26 - 43			2.080	2.198	4.148	4.219	2.017	1.920
Days 0 - 43			1.792	1.836	3.120	3.164	1.751	1.724

Adapted from a Phibro contractual research study summary by Dr. Merlin Lindemann at the University of KY 2018.

In the current study, there was no interaction between sex and treatment observed. Pigs fed **Vistore Copper** diet had the greatest numerical ADG in Phase 2 and the overall period among all treatment groups. Pig ADG was increased by 5.6% and 5.0%, respectively, compared to the control group (control and CuSO₄ data not shown). Pigs fed **Vistore Copper** also had numerically improved feed conversion in Phase 2 and for the overall period among all groups. Pig feed conversions were improved by 3.22% to 4.29% compared to the control group. In Phase 2, when the added copper level was reduced to 125 ppm, the only copper source that provided a performance advantage was **Vistore Copper**.

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