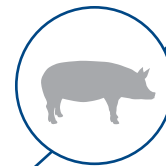


# Research Notes S-94

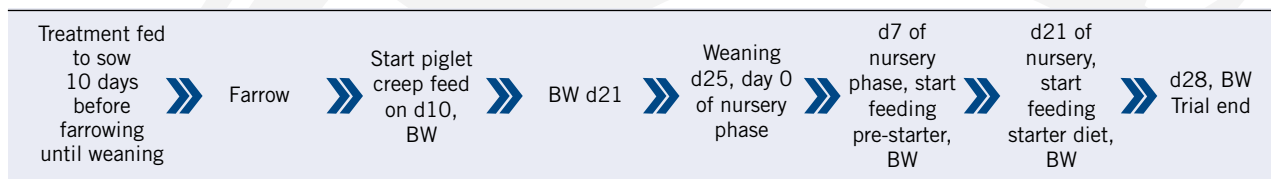
Arm & Hammer Animal and Food Production



## CELMANAX fed in lactation diets to sows and in creep and starter diets to piglets reduces the dependency on Zinc Oxide for performance.

### STUDY OVERVIEW

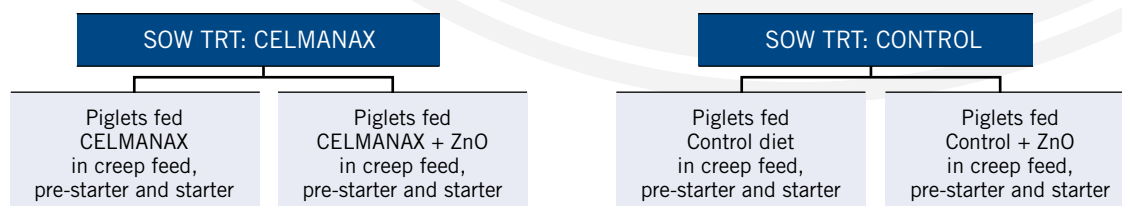
- This trial<sup>1</sup> was conducted to evaluate the effect of CELMANAX™ supplementation on growth and performance of nursery piglets.
- CELMANAX was fed in lactation diets to sows and in creep and starter diets to piglets.
- Below is a schematic of the timeline of the study and body weight (BW) measurements.



- 60 sows (Landrace x Large White) were assigned to one of two dietary treatments 10 days prior to farrowing date with 30 sows per treatment housed individually.
  - Control diet
  - Control diet plus CELMANAX SCP, 0.02%
- Piglets continued to be on the same treatments as their sows until the end of the trial.
- At 10 days of age, all the piglets were individually weighed and the litters were reassigned to four new treatments that were fed from creep feed to one week post weaning:
  - Control: Control diet
  - CELMANAX: Control + CELMANAX SCP
  - ZnO: Control + Zinc Oxide (ZnO)
  - CELMANAX + ZnO: Control + ZnO + CELMANAX SCP
- The piglets received during the entire experimental period (creep, pre-starter and starter) 3000 parts per million (PPM) ZnO and CELMANAX SCP as described in Table 1.
- At 25 days of age, piglets were weaned and assigned within the same dietary treatment as creep feed to 10 or 11 replicate pens with 15 pigs per pen.
- Piglet body weights were recorded at day 10, at weaning and at the end of the trial. Feed intake, feed conversion ratio, mortality and fecal score were also recorded in the nursery phase.
- All data were analyzed by ANOVA for a randomized block design using the GLM procedure of SPSS with sow as the experimental unit 10 days post farrowing and with pen as the experimental unit thereafter

**TABLE 1: INCLUSION OF CELMANAX SCP IN EXPERIMENTAL DIETS**

EXPERIMENTAL PERIOD	CELMANAX SCP
10 days of life – 7 post-weaning days	0.03%
7 – 21 post-weaning days	0.02%
21 – 28 post-weaning days	0.02%



## RESULTS

### Birth to Weaning performance:

- CELMANAX™ supplementation in sow lactation diets improved 10-day body weights compared to control-fed sows ( $P<0.01$ ) (Table 2). Weaning body weights were higher in the CELMANAX pigs compared to control and supplemented pigs with CELMANAX + ZnO being intermediate ( $P<0.025$ ) (Table 3).

**TABLE 2. EFFECT OF SOW TREATMENTS ON PIGLET 10-DAY BODY WEIGHTS**

SOW TRT	CONTROL	CELMANAX	P VALUE
Sows, n	29	30	
d10 BW, kg	2.412 <sup>b</sup>	2.624 <sup>a</sup>	0.025

<sup>ab</sup> Means within the same row with different superscripts differ

**TABLE 3. EFFECT OF SOW AND CREEP FEED TREATMENTS ON PIGLET BODY WEIGHTS AT WEANING**

SOW/CREEP FEED	CONTROL/CONTROL	CELMANAX/CELMANAX	CONTROL/ZNO	CELMANAX/CELMANAX + ZNO	P VALUE
Piglets, n	192	181	165	180	
Weaning BW, kg	5.028 <sup>b</sup>	5.28 <sup>a</sup>	4.948 <sup>b</sup>	5.12 <sup>ab</sup>	0.025

### Nursery performance:

CELMANAX supplementation in nursery rations improved feed intake, growth rate and body weight ( $P<0.001$ ) but did not affect feed efficiency ( $P=0.521$ ) compared to control, ZnO or CELMANAX + ZnO treatments (Table 4).

- Fewer piglets receiving CELMANAX or control diet required treatments compared to ZnO or CELMANAX + ZnO piglets (Table 4).

**TABLE 4. EFFECT OF TREATMENTS FED IN THE NURSERY PHASE ON PIGLET PERFORMANCE**

PIGLET TRT	CONTROL	CELMANAX	ZNO	CELMANAX + ZNO	P VALUE
Pens, n	11	11	10	10	
BW start, kg	4.986	5.177	4.943	5.104	0.864
BW finish, kg	13.132 <sup>ab</sup>	13.554 <sup>a</sup>	11.965 <sup>c</sup>	12.816 <sup>b</sup>	<0.001
ADG, g/d	291 <sup>ab</sup>	299 <sup>a</sup>	251 <sup>c</sup>	275 <sup>b</sup>	<0.001
ADFI, g/d	372 <sup>ab</sup>	387 <sup>a</sup>	318 <sup>c</sup>	361 <sup>b</sup>	<0.001
FCR g/g	1.296	1.305	1.305	1.329	0.521
Av. Mortality, %	3.63	1.52	5.58	4.39	
Treated piglets/total piglets	0.278	0.295	0.446	0.35	

<sup>abc</sup> Means within the same row with different superscripts differ

- There was no scouring observed in the trial (Table 5).

**TABLE 5. EFFECT OF TREATMENTS FED IN THE NURSERY PHASE ON SCOUR SCORE**

PIGLET TRT	CONTROL	CELMANAX	ZNO	CELMANAX + ZNO
Pens, n	11	11	10	10
0-7d	7.744	7.79	7.631	7.454
7-21d	7.991	7.99	8.017	8
21-28d	7.921	7.995	7.957	7.898

Score 1-9 with 1=diarrhea and 9=constipation

## CONCLUSION

Inclusion of CELMANAX in lactation, creep feed and nursery diets increased average piglet 10-day body weight by 212 grams ( $P=0.025$ ), which translated to 252 grams ( $P=0.706$ ) at weaning and 412 grams ( $P<0.01$ ) by the end of the nursery phase compared to control. Piglets fed CELMANAX performed better than piglets receiving ZnO.

Supplementation of CELMANAX in diets for sows and nursery pigs can help reduce mortality and result in heavier pigs through the end of the nursery phase. This may contribute to pigs requiring fewer days to reach slaughter weight, resulting in improved profitability.



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<sup>1</sup> Adapted from a study done at a private commercial pig research centre in Spain.

