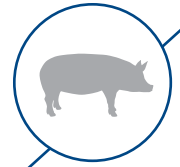


Research Notes

Arm & Hammer Animal and Food Production



CELMANAX reduces mortality and improves performance of nursery pigs fed diets without antimicrobials.

STUDY OVERVIEW

The effect of CELMANAX™ on sow and nursery pig performance has been well documented.^{1,2} However, studying its benefits on nursery pigs fed diets without antibiotics and pharmacological levels of Zinc Oxide (ZnO) might provide an additional tool to maintain productivity while meeting new regulations.

A study³ was conducted in collaboration with a large swine integrator in Spain to determine the benefits of CELMANAX supplementation in late gestation (day 90–day 110), lactation, piglet creep, and nursery diets. Hybrid hyper-prolific sows (n=269) and their litters ((Landrace x Large-white) x Pietrain) were used for the trial. All sows participated in the gestation phase and 94 were monitored throughout the lactation phase and their piglets during nursery phase. During the first 90 days of gestation all sows were fed a common standard diet. After 90 days of gestation, a total of 269 loose-housed sows in pens of 16 were randomly assigned to one of two treatment groups.

Late Gestation:

- 134 sows received a control diet and 135 sows received a control diet plus 0.02% CELMANAX SCP.

Lactation:

- Sows received the corresponding lactation feed (CONTROL n=54 and 0.02% CELMANAX SCP, n=46) after entering the farrowing room and until the day of weaning.
- Lactation lasted an average of 22 days, during which sow body condition, feed intake, fecal scores, and rectal temperature were monitored for both groups.
- The piglets were supplemented with creep feed from day 7 of lactation. The CELMANAX group creep feed was also supplemented with 0.02% CELMANAX SCP.
- The day after farrowing, piglets were weighed individually and the number of piglets born alive, stillborn, and mummified were recorded.
- Piglet body weight at weaning, pre-weaning mortality, medical treatments, and fecal scores were measured across both groups.

Nursery:

- Piglets were assigned to one of two groups based on the sow's lactation treatment group and body weight at weaning (control and 0.02% CELMANAX SCP).
- 20 pens of 30 piglets each per treatment were monitored through the nursery stage.
- Treatments were fed in the first two phases of nursery, 0–7 days and 7–21 days post weaning.
- Nursery pig performance, fecal score, withdrawal rate, mortality, and medical treatments were recorded for both groups.

Therapeutic doses of ZnO and antibiotics were not used in any of the experimental diets.

Statistical analysis:

Data were analyzed with statistic software Minitab version 17.0 Windows using sow as the experimental unit for parameters of gestation and lactation stages, and pen for the parameters during nursery period.

RESULTS

Late Gestation:

- Total and born alive litter size was not affected by treatments.
- A numerical reduction in stillborn piglets was noted in the CELMANAX™ fed sows ($P=0.146$).
- Average piglet BW at 24 hours after birth was higher for piglets born from CELMANAX fed sows compared to control fed sows ($P=0.12$).
- Sows that received diets supplemented with CELMANAX showed a lower mortality rate of piglets at 24h of life ($P=0.05$).
- No treatment effects on sows were noted for feed intake, body condition and fecal score.

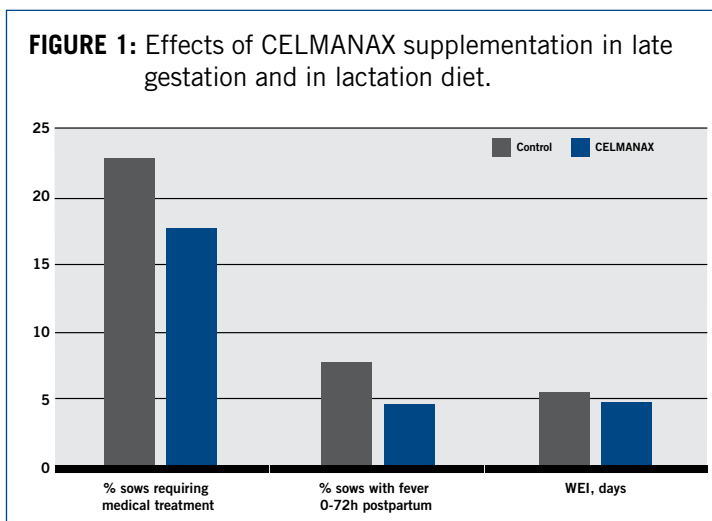
Parameter	Effects of CELMANAX supplementation during 90 – 110 days of gestation.		
	All sows		
	CELMANAX	Control	P-value
Sows, n	125	126	
Average piglet BW at 24h, kg/piglet	1.30	1.23	0.12
Total piglets born, n/parturition	19.49	19.88	0.57
Piglets born alive, n/parturition	17.35	17.71	0.56
Stillborn piglets, %	7.79	8.69	0.14
Mummified piglets, n/parturition	0.51	0.33	0.15
% piglet mortality 24h postpartum	7.76	11.03	0.05

Lactation phase:

- Piglet BW increased significantly for CELMANAX-fed multiparous sows.
- Piglets ADG increased numerically for CELMANAX-fed multiparous sows.
- Mortality and medical treatments were numerically lower in piglets from primiparous and multiparous CELMANAX fed sows.

Parameter	Effects of CELMANAX supplementation on piglet performance at weaning.					
	All sows			Multiparous sows only		
	CELMANAX	Control	P-value	CELMANAX	Control	P-value
Sows, n	46	54		34	40	
Average BW weaning, kg/pig	5.41	5.29	0.578	5.62	5.23	0.048
ADG 24 h-weaning, kg/d	0.180	0.176	0.688	0.191	0.177	0.073
% mortality 24 h-weaning	12.69	17.16	0.229	12.99	19.73	0.747
Medical treatment, n/litter	0.196	0.333	0.374	0.06	0.28	0.128

- Although not statistically significant, sows fed late gestation diets and lactation diets supplemented with CELMANAX had lower incidence of fever in the first 72 hours postpartum, needed fewer medical treatments during the lactation phase and had lower wean to estrus interval (WEI).



Nursery:

- Nursery pigs fed diets supplemented with CELMANAX™ had higher BW and ADG and a trend for higher average daily feed intake (ADFI) during the first 21 days of nursery.
- A numerical decrease in feed/gain, withdrawal rate, mortality, and need for medical treatments were also noted in nursery pigs fed diets supplemented with CELMANAX.

TABLE 3

Effects of CELMANAX supplementation to sows and piglets in the nursery.

Parameter	CELMANAX	Control	P-value
Pens, n	22	27	
BW d0, kg/piglet	5.62	5.35	0.373
BW d21, kg/piglet	9.32	8.93	0.031
ADG, kg/d	0.183	0.165	0.031
ADFI, kg/d	0.272	0.249	0.081
FCR (F/G)	1.605	1.703	0.135
Withdraw rate, %	4.24	5.19	0.111
Mortality, %	6.07	8.18	0.278
Medical treatment, n/litter	1.51	1.79	0.111

CONCLUSION

- In this study, sows supplemented with CELMANAX in late gestation had reduced piglet mortality in the first 24 hours after birth. Continued supplementation of CELMANAX in lactation diet of sows and in piglet creep statistically increased piglet weaning weight, and piglets supplemented with CELMANAX in the early nursery stage also saw an improvement in 21-day body weight, average daily weight gain, and average daily feed intake.



To learn more about CELMANAX contact your nutritionist, veterinarian or ARM & HAMMER™ representative or visit AHfoodchain.com.

1 Benefits of mannan oligosaccharide (MOS) for sows and weanling pigs. Hung, and Lindemann (2009)

Presented at the Midwest swine nutrition conference, Indianapolis., IN.

2 Peng Ma, Guozhu C, Jalukar S. Evaluation of CELMANAX SCP supplementation in sow diets on piglet performance at weaning. *J Anim Sci* 2013; Vol. 91, E-Suppl. 2.

3 Arm & Hammer Animal and Food Production 2022. Data on file.

