

Use of Provenia CF-Z in weaned piglets: results from a field trial in Spain

M. Castillo¹, S. Peris¹ and A. Palomo-Yagüe². ¹Novus Europe S.A./N.V, Reus, Spain. ²Universidad Complutense de Madrid, Madrid, Spain.

Background and objectives

The early development of piglets depends directly on their health and nutrition, and it is key for their lifetime performance. Intestinal challenges are the main cause of performance losses during the post-weaning period, which will consequently translate into critical economical losses accumulated throughout the pig's life. ZnO inhibit growth of certain pathogenic micro-organisms in the gut that challenges piglets during first days after weaning (Holm and Poulsen, 1996). However, there are other strategies that can be used after weaning. Benzoic acid is an organic acid that modify the intracellular pH of gut bacteria and shifts gut bacterial profile by creating an environment that minimizes the proliferation of pathogenic bacteria (Yousaf et al., 2016). Despite being commonly used as a feed supplement to promote gut health, benzoic acid is generally inactivated before reaching the hindgut, where it is most needed. However, when embedded in a fat matrix, benzoic acid is enabled to be slowly released throughout the intestinal tract where the pathogenic bacteria cause the most damage. The objective of the trial was to assess the efficacy of Provenia CF-Z a blend of protected benzoic acid (PBA) on piglets' performance and health under field conditions.

Material and methods

A trial was run in 4 commercial farms, where the piglets were fed diets containing either protected benzoic acid (PBA; 2.5kg/ton) or a control diet containing ZnO (2500 ppm). All the farms included in the trial were located in Spain and had similar facilities, size and nutrition program (no antibiotics added in feed). All of them were using ZnO during the first 10 days after weaning as a standard program (first and second diet). In total, 2608 piglets were fed with ZnO and 2618 with PBA. Feeds were equivalent nutritionally and only differ in the product tested for creep-feeding (7d-old up to 3-7 days post weaning) and pre-starter feed (from weaning (28d) to 6 weeks life). Piglets were allocated in pens depending on size (small, medium and large) and sex and performance were monitored for the whole period after weaning (6 weeks): feed intake (FI), average daily gain (ADG), mortality, runts piglets, incidence of disease and medication costs. Fresh feces for each one of the farms (8 replicates per group) were taken at the end of the experimental period to analyze by molecular methods microbiota profile (data being processed).

Results

Piglets fed diets containing PBA showed higher ADG and lower FCR in all the farms compared with CON piglets and there was not differences on FI. There was also a reduction on mortality, incidence of diarrhea and medication costs in all the farms, for the piglets receiving PBA in the diet (Table 1). Results for microbiological profiles are being processed.

Table 1. ADG, FI, FCR, mortality, medication costs and incidence of diarrhea of piglets receiving PBA or ZnO for each one of the farms included in the trial.

GROUP	FARM	ADG (g/piglets/day)	FI (g/piglet/day)	FCR	Mortality (%)	Medication Costs (€/piglet)	Diarrhea incidence (n/100)
Zn0	Farm 1	514b	510	1.325a	2.08a	0.5a	5a
	Farm 2	577.5b	573.7	1.456a	2.47a	0.4a	7a
	Farm 3	561b	550	1.392a	2.00a	0.3a	5a
	Farm 4	545b	550	1.420a	2.25a	0.35a	8a
PBA	Farm 1	395a	514	1.301b	1.72b	0.2b	2b
	Farm 2	404a	577.5	1.429b	1.74b	0.18b	3b
	Farm 3	408a	561	1.375b	1.18b	0.25b	2b
	Farm 4	395a	545	1.380b	1.43b	0.2b	5b
	P value	<0.01	NS	<0.05	<0.01	<0.01	<0.05

Conclusion

The use of a commercial source of protected benzoic acid in the first two diets in this field trial resulted in an equal or even better performance of piglets after weaning receiving 2500 ppm of ZnO.

References

- Holm, A & Poulsen, H.D. (1996). Zinc oxide in treating E. coli diarrhea in pigs after weaning. Compendium on Continuing Education for the Practicing Veterinarian. 18. S26+S48.
- Yousaf, M., Goodarzi B. et al.,(2016). Encapsulated benzoic acid supplementation in broiler diets influences gut bacterial composition and activity. British poultry science. 58. 10.