Weaning piglets without therapeutic Zinc oxide: a holistic approach in feed formulation and strategy, integrating multiple nutritional mechanisms

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Introduction

When it was published that the EU had decided to do a recall of the registration of ZnO for veterinary use against PWD, DLG/Vilofoss set out to develop a feeding concept that would enable pig producers to cease the therapeutic use of ZnO, without loss of productivity or increase of the antibiotic consumption.

Materials and methods

The studies were conducted in a Danish commercial piglet unit; normal production conditions. Weaned Danbred pigs (21-28 d old; 6,4-6,7 kg BW) from an external supplier was semi-randomly distributed in double pens. Smallest 50% of the piglets was offered a liquid preparation of Prestarter feed (Control/Trial) and milk replacer for the first 3-5 days. From day one, feed was offered in feeders, supplemented with small volumes of dry feed administered on solid floor for 3-5 days. Trial 1 Control feed was a traditional weaner diet (20,3-18,4-18,1 % CP), Trial 2: control feed same as trial feed of trial 1 (16,5-17,8-18,3 %CP). Trial feed (Trial 1: 16,6-17,7-18,4 %CP), trial 2: (16,4-18,0-18,3 %CP). Treatments was a combination of reduced CP level, feed components with high digestibility, content of fermentable (FCHO) and inert (ICHO) fibers, microbial enzyme and vitamin levels, using organic trace mineral sources and a combination of organic acids. In trial 1 there were 8 replicate pens (25 piglets/pen: 200 piglets/group) for data on piglet gain: 4 replicate pens (25 piglets/pen: 200 piglets/group) for data on feed intake and FCR. Trial 2 was doubled. Piglets were fed ad libitum during the entire trial periods.

Results and discussion

Production results from the two trials can be seen in Table 1.

Table 1. Productions results for pigs from Trial 1 and 2.

	Trial 1		Trial 2	
	Control	**Trial**	**Control**	**Trial**
Duration, days	49		42	
Zinc, mg/kg	2.500	100	100	100
BW, initial, kg	6,5	6,7	6,4	6,6
BW, final, kg	29,5	31,7	26,5	28,6
ADG, nursery, g/d	470[a]	512[b]	473	521
Standardized ADG (7-30 kg), g/d	481	506	506	538
ADFI, FUgp/d	0,78	0,84	0,84	0,82
FCR, FUgp/kg gain	1,66	1,68	1,77	1,61

[a,b] means in a row/within same trial that do not have same superscript differ ($p<0.05$)

In trial 1, piglets fed the trial diets showed higher daily gain and same FCR, compared to piglets fed a prestarter diet with high protein level, supplemented with 2500 ppm Zn, 0-14 days PW. Due to practical limitations, none of the trials included both a negative and positive control group. However, other experiences in the farm, performed parallel with these trials, showed that feeding control feed of trial 1 with only 100 ppm Zn, caused an increase in treatments and mortality.

Conclusion

In a well-managed high health piglet unit with known challenges that can be mediated by the use of therapeutic levels of zinc oxide, a feeding strategy/feed formulation, combining knowledge of FCHO/ICHO, optimal protein digestion and supporting intestinal integrity through use of high levels of microbial enzymes and vitamins, specially formulated trace minerals and a selection of organic acids, can substitute the use of therapeutic zinc oxide. Doing this, it is possible to achieve better performance than when feeding a traditional feed formulation including zinc oxide.