A securing piglet feeding program improves post-weaning growth and health without the use of high level of zinc oxide

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Background and objectives: With the objective to reduce the use of antibiotics, more attention has been paid to feed formulation (raw materials and nutrients) to drive piglet gut health and reduce the risk of diarrhea (Pluske et al., 2018). In this context, a securing feed program (AX'ECLA®, CCPA group) has been formulated without high level of zinc oxide and without antibiotics. The aims of this study were to compare this securing program with a standard piglet feed program and to evaluate the impact on piglet performance, diarrhea presence and antibiotic use.

Material and Methods: 160 weaned piglets (21 days of age, 6.9 kg) were divided into 2 dietary treatment groups, housed in pens of 5 animals. The Standard group received a 2-feed program during the post-weaning (PW) period (0-21 day (d) and 21-49 d) and the Securing group received a 3-feed program (0-7 d, 7-21 d and 21-49 d). The Securing feeds differed from the Standard, with higher inclusions of highly digestible raw materials (cereals and protein sources) (composition previously detailed in Gilbert et al., 2019) and with lower crude protein content between day 0 and 21 PW (Table 1). The amount of added zinc was 113 ppm in the different feeds. Individual body weight (BW), Average Daily Gain (ADG) and pen-based Feed Intake (ADFI) were recorded weekly. Faeces consistency were scored on day 6 PW and day 20 PW (scale 0 to 3). Individual antibiotic (AB) treatments were also recorded during the trial.

Results : ADFI was higher with the Securing program from day 0 to 21 (307 g/d vs 263 g/d, p<0.001), and BW and ADG were improved for the entire period with the Securing program (Table 2).One week after weaning, piglet faeces consistency was improved with Securing program (P=0.07 for fecal score 2; P=0.014 for fecal scores 2+3; Fig.1). Fewer pigs were individually treated with antibiotics with the Securing program (P=0.006)(Table 3).

Conclusion and discussion: The Securing feed program enables to achieve higher growth performance, with better faeces consistency and less antibiotic use. In the perspective of the ban of zinc oxide, securing piglet feeds by reducing crude protein content and selecting highly digestible raw materials is a way to maintain piglet performance and gut health.

Table 1: Nutritional values of the different feeds for the Standard and Securing program.

	Standard		Securing		
Time period	0-21 d	21-49 d	0-7 d	7-21 d	21-49 d
Crude Protein (%)	19.0	16.6	18.5	17.7	16.6
Net Energy (MJ/kg)	10.4	9.7	11.0	10.6	9.7
SID Lysine (%)	1.22	1.05	1.32	1.20	1.05

Table 2: Growth performance for the Standard and the Securing groups.

Traits	*n*	Standard	Securing	SEM	P-value Diet
BW (kg) day 0	80	6.93	6.94	0.116	0.951
BW day 21	80	11.19	12.13	0.141	<0.001
BW day 49	80	28.1	30.0	0.4	0.002
ADG (g/d) day 0 to 7	80	86	134	6.3	<0.001
ADG day 7 to 21	80	263	305	8.2	<0.001
ADG day 0 to 21	80	204	249	6.9	<0.001
ADG day 21 to 49	80	626	665	10.3	0.009

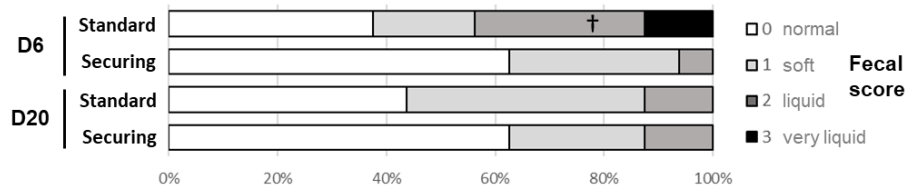

Figure 1: Fecal score on day 6 and day 20 PW (% of pens)
Chi-2 tests were performed for each day between Standard and Securing: † P=0.07; others not significant.

Table 3: Antibiotic treatments between 0 and 49 days.

	n	Standard	Securing	Chi-2 test
Number of pigs treated with AB	80	33	17	0.006

References:
Pluske et al., 2018. Animal Nutrition 4 : 187-196.
Gilbert et al., 2019. Journal of Animal Science 97:43-54.