

Reducing the dietary protein content of the weaning diet

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Considering the interest of dietary protein reduction as a valuable alternative to the use of antibiotics and therapeutic zinc oxide at weaning, its consequences on pig performance during the few weeks after weaning were studied. The reduction of the digestible lysine content induced by diet protein reduction at weaning was observed in a first trial. The second trial compared, three associations of raw concentrated protein materials in a context of a low protein and digestible lysine diet contents and a control diet in normal and degraded rearing conditions.

Material and methods

Trial 1

- Respectively 1.3, 1.2, 1.1 and 1.0 g digestible lysine per MJ of net energy (NE) and 20.3, 19.0, 17.5 and 16.4 % protein content
- Diet protein reduction was concomitant with that of soybean meal content (respectively 19, 15, 11 and 8 %). Incorporation rate of whey and protein concentrates were constante
- 360 piglets, 6 pens per diet

Trial 2

- Control diet: protein 19,0 % and 1.2 dig. lysine/MJ NE (C19)
- Low protein (17.0 %) and digestible lysine (1.0 dig. lysine/MJ NE), diets based on soybean meal (C17), vegetable protein concentrates (V17) and dairy protein concentrates (A17).
- 480 pigs, 6 pens per diet and rearing conditions
- In degrading rearing conditions, the use of antibiotics was forbidden and the room was not cleaned
- Fecal dry matter content, complete blood count and body condition score were recorded

Table 1: Effects of the diets in normal and degraded conditions during the first 2 weeks after weaning

Breeding conditions	Normal					Degraded					
	Diet ¹	C19	C17	V17	A17	Diet ² effect	C19	C17	V17	A17	Diet ² effect
ADG, g/d		314	300	305	309	NS	272	229	246	273	NS
Feed/gain, kg/kg		1.27a	1.37b	1.36ab	1.35ab	*	1.32	1.44	1.42	1.40	t
Feces dry matter, %		25.0a	26.1a	31.1b	30.5b	**	24.5	24.7	27.4	27.0	t

¹Respectively in C19, C17, V17 and A17: soybean meal, 16, 12, 1, 1 %, vegetable protein concentrates, 9, 8, 15, 4 %, dairy protein concentrates, 0, 0, 0, 22 %.

²P.value : ** : <1%, * : <5%, t : <10 %

Results

- The first trial showed that for every g of digestible lysine per kg diet, the respective variation of ADG and FCR were 19 g/d and 0.08 kg/kg during the first 2 weeks after weaning
- Degraded rearing conditions induced expected alterations of plasma parameters such as lymphocytes and hematocrit and reduction of performances (ADG:-17 %)
- Surprisingly the effect of diet was only significant in healthier breeding conditions (table 1)
- The results also indicated that the performances observed over the last 4 weeks post-weaning were not affected by the type of diets distributed immediately after weaning.



Conclusion

The results suggested that rearing conditions predominated on the response of the animals to different diets. Diversification of protein intake which imply increasing cost of the diet did not appear justified in poor farming conditions while it increased the fecal dry matter content in normal breeding conditions. Reducing the dietary protein level of the weaning diet around 17.0 % is feasible but it will conduct to a reduction of performances in the actual context.

