Tail-biting in pigs: change in feeding behaviours during a tail-biting outbreak

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Introduction Since 2008. tail docking is prohibited in EU and in Switzerland but only two of the European countries (Sweden and Finland) have actually implemented it. Tail biting is triggered by lack of enrichment material. bad environmental conditions. unbalanced diet. and disease (Sonoda et al. 2013). The objective of this retrospective data analysis was to assess changes in feeding behaviour of group housed pigs fed a protein restricted diet before during and after a tail biting outbreak.

Materials and Methods Seventy-one pigs (117.0 ± 10.7 day old; 47.8 ± 9.7 kg) had restricted (80% of assumed ad libitum intake) access to the grower diet. The diet was formulated to contain 80% dietary crude protein (CP) and essential amino acid (EAA) of the Swiss feeding recommendation. Pigs were housed in a 78 m^2 pen with straw in racks and woodchips on the floor. The pen was split into 4 subunits, with 13.39 m^2 plain resting area and 6 m^2 of slatted floor in each. The pen was equipped with 4 automatic feeders, which allowed measuring the individual feed intake per visit, the number of visit per day and the time spent at each visit. Pigs had *ad-libitum* access to water through nipple drinker. Two months after the beginning of the trial, around 75% of the pigs presented tail lesions. The tail-biting outbreak was retrospectively divided into 3 phases (Taylor et al. 2010): the **pre-injury phase (A)**. before tail damage appears, the **acute phase** (B, once the phenomenon was discovered) and the **recovery phase** (C, after the tail biting initiator was removed and *ad libitum* feeding was restored). Each phase lasted 7 days. Total feed intake, average feed intake per visit, maximal consumption per visit, minimum consumption per visit, numbers of visit, and total time spent eating were calculated per pig and per day. The feed efficiency and daily gain were summarized per phase and per pig. For "total feed intake" and "total time spent at the feeder" traits, body weight or total feed intake were respectively included as covariate in the model. Comparisons between phases were performed with R in repeated measures ANOVA ("emmeans and "lme4" packages).

Results Except for average feed intake per visit, feeding behavior traits differed (P<0.01) among the phases (Table 1). The daily feed intake reported for a standardized bodyweight (48.3 kg) was reduced (P<0.001) in the A and B compared to the C phases. which concurs with the restoration of *ad libitum* feeding in phase C. In accordance, average daily gain was lower (P<0.001) in phase A (0.66 kg/d) and B (0.59 kg/d) compared to C (1.34 kg/d). Mean consumption time adjusted for a defined feed intake (2100 g) was longer in phase A compared to phases B and C, meaning that pigs learn to eat faster and this independently of age. This behavior persisted even when feed was offered *ad libitum*. Feed efficiency was lower (P<0.05) in phases A and B compared to phase C. One may think this is a consequence of the stress generated by the tail-biting outbreak. Number of visits to the feeder differed (P<0.05) among phases, decreasing from phase A to B and increasing from B to C, but not reaching a higher level as in phase A.

Table 1 Differences in average feed intake and feeding behaviour traits among the pre-injury (A), the acute (B) and the recovery phase (C)

		Differences in estimated mean[1]	P-value
Daily feed intake. g/d	A-B	-6.78	0.961
	B-C	-656.3	<0.001
	A-C	-649.2	<0.001
Feed efficiency	A-B	0.071	0.338
	B-C	-0.190	<0.001
	A-C	-0.119	0.050
Mean consumption time. s	A-B	192.2	<0.001
	B-C	-26.4	0.728
	A-C	165.9	<0.001
Number of visits	A-B	2.35	<0.001
	B-C	-0.98	0.006
	A-C	1.37	<0.001

[1] e.g.: A-B = estimated mean phase A- estimated mean phase B

Conclusions Total feeding time, number of visits and feed efficiency were reduced (P<0.05) during the outbreak of tail-biting. These finding could be an indicator of a putative increased level of stress. Restoring *ad libitum* feeding and removing the tail-biting initiator led to the end of the outbreak. Thus, one can conclude that feeding behaviour traits may be a potential forerunner indicator of tail-biting outbreaks.

References

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