

# The effect of a meal dominant in dairy protein during the suckling period

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Providing feed to suckling piglets is getting more and more attention for different reasons. Litter size increases, which makes it favourable to provide piglets with additional feed besides sow milk to realise optimal growth during the suckling period.

It has been calculated that the milk production of modern sows is not sufficient for maximal growth of their litters from day 8-10 of lactation onwards.

## Maintain optimal growth

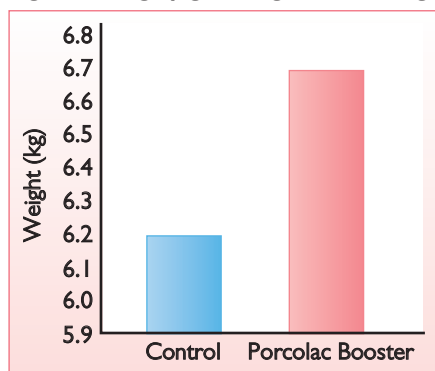
Additional feed intake during the suckling period is desirable to maintain optimal growth of piglets during the suckling period. Besides that, intake of additional feed during the suckling period will facilitate the change from liquid milk to solid feed after weaning.

It is known that a low feed intake post-weaning is the main cause of damage to the intestines that is occurring in early weaned piglets. This damage can lead to post-weaning health disorders like diarrhoea.

Weaning problems can be partly solved by a high intake of pre-starter diets before weaning.

Intake of feed before weaning has been shown to improve the adaptation to the weaning process and to result in a higher performance in the immediate post-weaning

Fig. 1. Average piglet weight at weaning.



Feeding the piglets with Porcolac Booster.

period and in the total rearing period as well. However, within litters there are piglets that have a good intake of pre-starter diets, while other piglets hardly eat any of the diet.

Therefore, it is not only important to increase the total feed intake of litters during the suckling period, but also to increase the number of eating piglets within litters.

Diet presentation and diet composition are important factors to increase the number of eaters within litters. During the first weeks of life, the digestive tract of the piglets is adapted to digest nutrients like lactose, fat and the milk proteins casein and whey. Therefore, pre-starter diets composed of dairy nutrients and highly digestible feedstuffs should preferably be used.

To obtain an effect on growth rate, pre-starter diets should be highly concentrated considering the relatively low feed intake of the piglets. Also the presentation of the diet can influence the feed intake of the piglets. Mash diets can easily be sampled by piglets and are more easily ingested than (hard) pellets.

Therefore, a mash diet with a high content of dairy ingredients could probably increase the number of eating piglets within litters.

Nutrifeed developed Porcolac Booster, a meal diet containing >65% dairy products, to best address the needs of young piglets.

The diet contains feedstuffs that have a high similarity to sow milk and are highly digestible, to assure a high percentage of eaters. A study was undertaken to investigate whether Porcolac Booster improved feed intake per litter and increased the number of eating piglets within litters.

## Materials and methods

The trial comprised two treatments, a commercial Dutch pelleted pre-starter diet and Porcolac Booster.

Each diet was fed to a minimum of 30 litters from day five after birth until weaning at approximately 21 or 28 days. Litters containing 11-14 piglets at day five after birth were used.

During the first week of feed supply (day 5-11), the feed was provided to the piglets three times a day for one hour. From day 12 onwards, the piglets had ad libitum access to the diet, which was fed in a feeder.

Feed intake of the diet was measured for the periods day 5-11, day 12-18, day 19-21 or day 19-28 and the total experimental period. Growth rate of the piglets was calculated for the total suckling period, based on birth weight and weaning weight of the piglets. Additionally, camera recordings

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were made to determine the percentage of eaters within litters.

Piglets were classified as eaters when they showed a minimum of three feeding bouts a day, to make sure that coincidence of visiting the feeder was excluded. The number of feeding bouts was recorded for each piglet individually. A feeding bout was defined as:

- Piglet puts its head > 2 seconds in the feeder.
- Piglet is chewing after putting his head in the feeder.

Recording on days 13, 19 and 28 gave information about the developments of the eating behaviour of the piglets.

## Results

In total, 68 litters with on average 12,4 piglets per litter at day five after birth entered the trial, resulting in a total of 856 piglets. The trial was performed without major health problems and those were not affected by treatment. Camera recordings were made to study the percentage of eaters and non-eaters within litters. In total, recordings were made of 30 litters, evenly distributed over treatments.

The results of feed intake and growth are presented in Table 1. The results of the camera observations are given in Table 2.

Piglets were on average 4.7 days of age at the start of the trial. Birth weight of the piglets was similar for both treatments. Piglets fed the Porcolac Booster meal strongly tended ( $P=0.063$ ) to have a higher average daily weight (ADG) gain compared to the control piglets. The higher ADG in the Porcolac Booster group resulted in 8% higher body weight of the piglets at weaning.

At weaning, the piglets fed with Porcolac Booster were 458g heavier than the control group ( $p=0,057$ ), see Fig. 1.

Feed intake in the first week of feed supply did not differ between treatments, however, as demonstrated in Fig. 2, the intake of Porcolac Booster increased more constantly and gradually than in the control group.

A strong significant effect of feed intake was found in the second week of feed supply (day 12-18), where piglets fed Porcolac

	Control pre-starter n=35	Porcolac Booster n=33	LSD	P- value
Litter size (No.)	12.5	12.4		
Age at start (days)	4.7	4.8		
Age at weaning (days)	22.9	23.5	1.531	0.396
Weight at birth (kg/piglet)	1.22	1.25		
Weight at weaning (kg/piglet)	6.2	6.7	0.458	0.058
ADG (g/l)	219	230	11.21	0.063
Feed intake day 5-11 (g/litter)	58.6	70.2	17.16	0.181
Feed intake day 12-18 (g/litter)	136.4	411.8	135.4	<0.001

LSD: least significant difference at alpha <0.05

**Table 1. Performance of all litters for feed intake until day 18 and growth per experimental treatment until weaning (n=68).**

Booster meal had three times higher feed intake compared to control piglets. Fig. 3 shows the cumulative feed intake after 28 days. It is expected that the higher digestibility of Porcolac Booster has resulted in the additional weight gain.

	Control pre-starter	Porcolac Booster
Eaters (%)	86	92
Frequency of eating bouts/day	16.8	25.6
Average feeding time/piglet/day	301.5	493.6

**Table 2. Percentage of eaters, frequency and feeding time/piglet/day at day 26.**

Schothorst Feed Research demonstrated earlier that the capacity to digest vegetable feedstuffs is limited in newly weaned piglets, a group which is comparable to young piglets. Tokach et al. (1995) demonstrated as well that piglets fed dairy feedstuffs were gaining more weight in the first week after weaning than when fed vegetable feedstuff.

Araujo et al. (2010) and Mahan et al. (1993) had similar conclusions.

Numerically higher frequencies and feeding duration were found on the recording days 13, 19 and 26 when piglets were fed

Porcolac Booster diet. Frequency of feeding bouts per day and duration of feeding per day was approximately 30% higher when piglets were fed Porcolac Booster compared to the control diet on day 13 and 19.

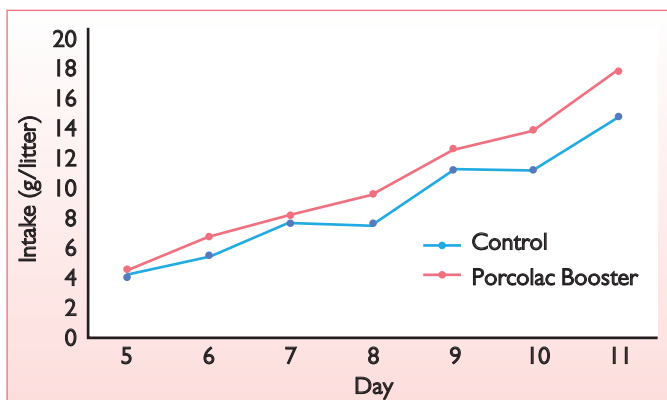
On the third recording day (day 26) the frequency and duration was even 52% and 64% higher in the Porcolac Booster group compared to the control. At day 26 92% of the piglets in the Porcolac Booster group were defined as eaters.

## Conclusions

- Porcolac Booster significantly increased feed intake of piglets during the suckling period (from day five to weaning) compared to the control diet.
- Porcolac Booster tended to increase weaning weight of piglets ( $p=0.058$ ), with a 458g higher weight at weaning.
- The number of piglets per litter did not influence feed intake.
- The number of eaters in the Porcolac Booster group was 92% at day 26.
- Feeding Porcolac Booster meal numerically increased the frequency and duration of the feeding bouts of piglets compared to that of the control diet. ■

References are available from the author on request

**Fig. 2. Average daily intake (g/litter).**



**Fig. 3. Cumulative feed intake (g/litter).**

