

Fermented potato protein for sow diets

DURING BIRTH AND LACTATION, SOWS MAY SUFFER FROM METABOLIC AND PHYSICAL STRESS. FEEDING FERMENTED POTATO PROTEIN CAN BE THE SOLUTION SAYS TESSA RONDEN AND RUDI FORIER.



Walloon Agricultural Research Centre, Gembloux, Belgium to test the effect of LS on the zootechnical performances of sows and piglets, when the product is administered to the sows from seven days before farrowing till weaning.

MATERIALS AND METHODS

The study was done during the first half of 2009. 18 sows for the LS group and 22 sows for the control group were selected from the Belgian Landrace X Pietrain (stress negative). The piglets are weaned at 24 days. LS was mixed in the diet for the trial group. The control group received a diet with a comparable composition, but without LS.

The sows were fed a gestation feed upon entrance in the farrowing unit from one week before farrowing till three days after parturition. They added 20 gram LS as topdressing. From the fourth day, they receive lactation feed till weaning. This feed had been enriched with LS at a rate of 1 kg per tonne. There was no difference in feed consumption.

Special attention was given to the interval between birth and the first suckling and the intake of colostrums of the piglets. To measure this parameter, piglets were weighed individually after birth and 24 hours after that. The total production of colostrum produced by the sow is calculated by adding all taken colostrum through the pigs.

MORE COLOSTRUM

Between the two treatments there was no difference in loss of back fat measured between both groups of sows. LS did not modify the catabolism of body reserves. The average number of live born piglets per litter was 11.5 for LS, 11.32 for the control group. The stillborn piglets were slightly higher in control (0.73) than the LS treatment (0.61). There was no significant difference in litter size found between the two treatments. The low variation in total number of piglets born was not caused by LS since it was only given 5 days before farrowing. The sows of the LS group produced 19% more colostrum than the control group.

The LS piglets have an intake of 346 +/- 9 grams versus 277 +/- 7 grams of colostrum during the first 24 hours

Fermented potato protein targets the endocrine and digestive system of the sow

There are various causes for metabolic stress and a negative energy balance in pigs: Sudden changes in feeding, weaning, malnutrition, infections, low feed intake, stress of birth for the piglet, variation in temperature, transport etc. Very often antibiotics or other drugs are used to overcome the negative effects of these stress factors. However, the use of these drugs needs to be kept to a minimum for food and environmental safety reasons. It is therefore better to fight these metabolic stress factors via different routes, such as proper feeding and certain feed ingredients. A fermented potato protein (Lianol Solapro, hereafter called LS), manufactured by Ardol B.V. in the Netherlands targets the endocrine and digestive system of the sow and can overcome these stress factors via the nutritional route. This protein is fermented by a specific bacteria culture produced at DSM, Germany and Artechno, Belgium. To put this hypothesis to the test the company asked the



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after farrowing. This difference of 69 grams or 20% is highly significant. Colostrum gives immunitary protection and energy to the piglet to regulate its temperature and growth. A higher intake in colostrum gives a higher intake in immunoglobulin, and thus the piglet can profit better and longer from the maternal antibodies.

Its health status will be better. The colostrum production of the sow is a function of the stimuli given by the suckling piglets. The higher production and intake of colostrum is thus coherent with the lower interval birth – first suckling and the higher vitality of the piglets of the LS group.

POSITIVE EFFECT ON FERTILITY

The pregnancy rates were higher in the LS group compared to the control group. Although not significant, there is a tendency that LS improves the fertility. The average interval between birth and first suckling was significantly lower for the LS group (42 +/- 2 min) versus the control group (59 +/- 3 min). The interval between birth and the first suckling is a good indicator for the vitality of the piglet. Here they show that LS in the sow's diet around farrowing improves the vitality of the piglets. The interval between birth and first suckling cited in the literature is 15 to 30 minutes. The higher values they found in the trial may be caused by the fact that in many sows the parturition was induced.

WEIGHT GAIN

The difference in weight during the first 24 hours is significant for the LS group. At day four, this difference between the treatments is highly significant. The average daily gain of the piglets was higher with LS than the control group except between day 4 till d14. There are less piglets with a body weight lower than five kg with the treatment LS at weaning (5 vs. 6 %) and more piglets over 8 kg body weight (14 vs. 12 %) in the LS group. There are less light piglets in the treatment LS comparing with the control group, which induces a higher percentage of heavy pigs.

Administration of LS to the sows during lactation induces a higher % of heavy piglets. This clearly improves the chances for better growth and feed conversion during the subsequent fattening period. The mortality rate is higher in the control than in the LS group. The overall mortality during the period from birth till weaning is 2.8 % lower for the LS group (9.2 vs. 12.0 %). The mortality for the LS group is lower than the control group. The better vitality, the higher colostrum intake of the piglets and the higher milk production of the sow reflect themselves in a higher survival rate during lactation. Thus, LS reduces the mortality during the lactation period. The IGF-1 levels of the piglets of the LS group are significantly higher, at day 4 (8.7 vs. 4.2) and day 24 (10.4 vs.



Adding fermented potato protein to sow feed increased the colostrum production and more colostrum was consumed by the piglets

5.9). The IGF-I is higher in LS group than the control group for the piglets. There are two possible explanations for this phenomenon: A) The piglets were born with a higher IGF-1 level B) The higher colostrum and milk intake of the LS group. However, this higher IGF-1 level is again in line with the higher vitality at birth and the higher colostrum intake.

CONCLUSION

LS permits to increase the productivity of the sows by reducing the negative effects of (metabolic) stress. The sows produce significant more colostrum. Also this trial shows a better fertility for the sows given LS during the lactation. The piglets have a higher intake of colostrum, which has its effects on growth and mortality till weaning, and thereafter. The results indicate that the piglets of the LS group have a smaller interval between the moment of birth and the first suckling and also have a higher colostrum intake. The increase in vitality of the newborn piglets was characterised mainly by a shorter time between birth and first suckling, but also by a lower mortality rate in newborn and weaned piglets. The improvement noted in the piglets was also characterised by a higher average daily weight gain and at the same time, a higher weight throughout the period of lactation. The piglets of the LS supplemented sows have a higher vitality, growth and survival rate. <-