ISSN: 2772-283X

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animal science proceedings

The Role of Animals in Human and Planetary Health
Proceedings of the British Society of Animal Science

12th - 14th April 2022
EMCC Nottingham and Online

April 2022
Volume 13
Issue 1

animal

148. Impact of dietary sodium diformate in sows on suckling piglets under poor sanitary conditions

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Application: Dietary sodium diformate used in sow feed at low dosages acts as a performance enhancer for suckling piglets under commercial conditions. *Introduction*: The application of organic acids and their salts to diets for pigs has been studied extensively under varying conditions (Lückstädt and Mellor, 2011). Despite well-documented effects of diformates on growing pigs, data on their impact when fed to sows during late gestation and lactation, and the subsequent effects on their suckling piglets under commercial conditions are not available. In this trial, a lower dosage (5 kg/t) was used than that normally recommended, to investigate whether further economic improvement could be achieved.
Materials and methods: This study tested the effects of sodium diformate (Formi® NDF, ADDCON) fed to sows on their suckling piglets and was conducted under veterinary supervision. Fourteen sows (DanBred) on a commercial farm (Northern Serbia) were equally divided into two groups, each containing 7 sows and fed a typical lactation diet (corn-wheat-soy based), containing either 0.5% of NDF, or a negative control without the additive, from one week before farrowing till the end of weaning (day 28). The lactation diet was fed ad libitum and daily feed intake measured. The following parameters were monitored at farrowing: number of piglets born alive, individual weight of new-born piglets and litter weight of new-born piglets. At weaning the number of weaned piglets, the individual body weight of weaned piglets and litter weight during weaning was recorded. Data were analysed using the t-test and a significance level of 0.05 was used in all tests.
Results: Feed was well accepted by both groups. Feed intake is only available as pooled data - sows fed the NDF-diet had a numerically higher feed intake compared to the negative control group (+560 g/day, Table 1). At farrowing, the weight and number of piglets born alive increased significantly ($P < 0.05$) due to the addition of the additive: live births increased by 1.5 piglets per sow. Litter weight of piglets differed significantly by more than 2.3 kg, for the NDF-fed sows. No difference was observed for the number of weaned piglets per sow although the weaning weight of the piglets at day 28 was highly significantly ($P < 0.001$) improved (520 g heavier piglets in the NDF-group), leading to a numerically ($P = 0.15$) increased litter weight at weaning of more than 8.5 kg in NDF-fed sows. The uniformity of overall litter weight was also improved. It should be noted that some uncertainty may have resulted from the small sample size.

Table 1
Performance parameters of piglets from sows fed with or without sodium diformate (NDF).

Parameter	Control (n = 7)	0.5% NDF (n = 7)	P-value
Daily feed intake sow [kg]	5.18	5.74	-
Piglets born alive, per sow [n]	13.6 ± 1.7	15.1 ± 1.4	0.049
Weight of new-born piglets [kg]	1.41 ± 0.07	1.42 ± 0.07	0.46
Litter weight at birth [kg]	19.11 ± 1.90	21.45 ± 1.99	0.03
Piglets weaned, per sow [n]	10.6 ± 2.4	11.0 ± 1.6	0.36
Weight of weaned piglets [kg]	6.74 ± 0.16	7.26 ± 0.23	0.0003
Litter weight at weaning [kg]	71.17 ± 15.95	79.68 ± 10.59	0.15

Conclusion: As previously reported (Øverland et al., 2009, Lückstädt, 2011, Lückstädt and Petrovic, 2019), lower dosages of sodium diformate in sow diets during the suckling period may indirectly support piglet production.

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Sodium diformate in lactating sows

Impact of dietary sodium diformate in sows on suckling piglets under poor sanitary conditions

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Introduction:

The application of organic acids and their salts to diets for pigs has been studied extensively under varying conditions (Lückstädt and Mellor, 2011). Despite well-documented effects of diformates on growing pigs, data on their impact when fed to sows during late gestation and lactation, and the subsequent effects on their suckling piglets under commercial conditions are not available. In this trial, a lower dosage (5 kg/t) was used than that normally recommended, to investigate whether further economic improvement could be achieved.

Materials and methods:

This study tested the effects of sodium diformate (FORMI® NDF, ADDCON) fed to sows on their suckling piglets and was conducted under veterinary supervision. Fourteen sows (DanBred) on a commercial farm (Northern Serbia) were equally divided into two groups, each containing 7 sows and fed a typical lactation diet (corn-wheat-soy based), containing either 0.5% of NDF, or a negative control without the additive, from one week before farrowing till the end of weaning (day 28). The lactation diet was fed ad libitum and daily feed intake measured. The following parameters were monitored at farrowing: number of piglets born alive, individual weight of new-born piglets and litter weight of new-born piglets. At weaning the number of weaned piglets, the individual body weight of weaned piglets and litter weight during weaning was recorded. Data were analysed using the t-test and a significance level of 0.05 was used in all tests.

Results:

Feed was well accepted by both groups. Feed intake is only available as pooled data - sows fed the FORMI® NDF-diet had a numerically higher feed intake compared to the negative control group (+560 g/day, Table 1). At farrowing, the weight and number of piglets born alive increased significantly ($P<0.05$) due to the addition of the additive: live births increased by 1.5 piglets per sow. Litter weight of piglets differed significantly by more than 2.3 kg, for the NDF-fed sows. No difference was observed for the number of weaned piglets per sow although the weaning weight of the piglets at day 28 was highly significantly ($P<0.001$) improved (520 g heavier piglets in the NDF-group), leading to a numerically ($P=0.15$) increased litter weight at weaning of more than 8.5 kg in NDF-fed sows. The uniformity of overall litter weight was also improved.

Table 1: Performance parameters of piglets from sows fed with or without sodium diformate (FORMI® NDF)

Parameter	Control (n=7)	0.5% FORMI® NDF (n=7)	P-value
Daily feed intake sow [kg]	5.18	5.74	-
Piglets born alive, per sow [n]	13.6±1.7	15.1±1.4	0.049
Weight of new-born piglets [kg]	1.41±0.07	1.42±0.07	0.46
Litter weight at birth [kg]	19.11±1.90	21.45±1.99	0.03
Piglets weaned, per sow [n]	10.6±2.4	11.0±1.6	0.36
Weight of weaned piglets [kg]	6.74±0.16	7.26±0.23	0.0003
Litter weight at weaning [kg]	71.17±15.95	79.68±10.59	0.15

Conclusion:

As previously reported (Øverland et al., 2009, Lückstädt, 2011, Lückstädt and Petrovic, 2019), also lower dosages of sodium diformate in sow diets during the suckling period can indirectly support piglet production. Thus, it can be stated that FORMI® NDF acts as a performance enhancer for suckling piglets under commercial conditions.