Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 10 *Swine Day (1968-2014)*

Article 358

1987

The effects of added niacin during lactation on sow and litter performance (1987)

Robert D. Goodband
Kansas State University

Jim L. Nelssen

Recommended Citation

Goodband, Robert D. and Nelssen, Jim L. (1987) "The effects of added niacin during lactation on sow and litter performance (1987)," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 10. https://doi.org/10.4148/2378-5977.6198

THE EFFECTS OF ADDED NIACIN DURING LACTATION ON SOW AND LITTER PERFORMANCE

R.D. Goodband and J.L. Nelssen[1]

Summary

An on-farm field study utilizing 231 sows was conducted to determine the effects of added niacin during a 21-day lactation on sow and litter performance. At farrowing, sows were assigned to one of two dietary treatments that provided either 200 or 1000 mg niacin/day. All litters were equalized within dietary treatment by 24 hours following farrowing. All sows had a similar number of pigs born alive, pigs equalized per litter, and average pig and litter birth weights. Feeding sows a diet providing 1000 mg additional niacin did not significantly affect the number of pigs weaned, pig survival, or average pig and litter weaning weights. Furthermore, added niacin did not affect sow feed intake as measured on a daily basis or for the overall lactation. However, those sows fed 1000 mg additional niacin lost slightly more weight ($P<.15$) during lactation than those fed the control diet.

Introduction

Little is known about the effects of supplemental niacin in lactation diets on sow productivity. In dairy cattle, niacin has been shown to increase milk yield, milk fat, and function as a cofactor in carbohydrate, protein, and lipid metabolism. Should these benefits also apply to the lactating sow, niacin could play an important role in improving sow productivity and litter performance. In 1986, an experiment was conducted evaluating three levels of additional niacin in sow gestation-lactation diets (KSU, Report of Progess 507, page 14). In that study, increasing levels of added niacin resulted in numerically higher pig survival and pig weaning weights. Therefore, we conducted a field trial designed to further evaluate the effects of added niacin in lactation diets on sow and litter performance.

Experimental Procedures

During gestation all sows (Landrace x Yorkshire) were housed outside and fed 4.5 lbs/day of a 13% crude protein milo-soybean meal diet until day 100 of gestation. From day 100 to farrowing, feed intake was increased to 6 lbs/day.

[1]We acknowledge gratefully Dale Keesecker and Keesecker Enterprises, Washington, KS for allowing this study to be conducted on their farm and Brad Wolf for assistance in data collection.

On the day of farrowing, sows were randomly assigned by parity and condition to one of two dietary treatments, providing either 200 mg additional niacin/day (Control) or 1000 mg niacin/day (Niacin). All vitamins including niacin were provided in a 2 lb premix, which was fed in the morning, followed by ad libitum consumption of the regular lactation diet (Table 1). This feeding regimen ensured that all sows received the exact level of additional niacin, while still allowing ad libitum feed intake during lactation.

Sow and pig weights were recorded within 24 hours following parturition, and litters were standardized within each dietary treatment. Sow and pig weights were again recorded at weaning (day 21 of lactation), when the number of pigs weaned also was recorded. Sow feed intake was recorded daily.

Results and Discussion

The effects of added niacin during lactation on sow and litter performance are presented in Tables 2 and 3. All sows had a similar number of pigs born alive, pigs equalized per litter, and average pig and litter birth weights. This would be expected, since experimental treatments were not initiated until farrowing. Additional niacin resulted in no improvement ($P>.20$) in the number of pigs weaned, pig survival, or pig and litter weaning weights. These criteria were very high and could be considered excellent by standard production values. These values also indicate the high productivity of the sow herd, especially considering that the average lactation length was 19 days. There were no differences in feed intake among treatments as measured either on a daily basis or for the overall lactation. However, sows fed additional niacin tended ($P<.15$) to loose more weight during lactation than those fed the control diet. Commonly, weight and/or backfat loss during lactation is indicative of high milk production. However, in this experiment, there is no evidence for increased milk production by sows fed more niacin because their litters were not heavier at weaning than those of control sows.

The results of this study indicate no improvement in sow or litter performance for sows fed 1000 mg/day added niacin compared to sows fed 200 mg/day added niacin.

Table 1. Composition of Diets.

Ingredients, %	Lactation Diet[a]	Control Diet[b]	Niacin Diet[b]
Milo	77.35	76.11	75.84
Soybean meal (47% CP)	15.75	15.78	15.80
Monocalcium phosphate (21% P)	2.25	2.25	2.25
Limestone	1.05	1.01	1.01
Soybean oil	3.00	3.00	3.00
Salt	.50	.50	.50
Sow vitamin premix	--	1.25	1.25
Trace mineral premix[c]	.10	.10	.10
Niacin premix	--	--	.25
	100.00	100.00	100.00

[a]Fed to all sows ad libitum
[b]Fed at 2 lbs/hd/d.
[c]Each lb of premix contains the following: Zinc 97.5 g, iron 72.0 g, manganese 19.8 g, copper 9.75 g, iodine 135 mg and selenium 180 mg.

Table 2. Effect of Added Niacin during Lactation on Litter Performance.

Item	Control	Niacin
No. of litters	113	118
No. of pigs born alive	10.67	10.20
No. of pigs equalized, day 1	10.53	10.48
No. of pigs weaned	9.64	9.42
Pig survival, %	91.7	89.9
Pig performance, lb		
Avg. pig birth wt.	3.25	3.32
Avg. litter birth wt.	34.04	32.92
Avg. pig weaning wt.	11.49	11.50
Avg. litter weaning wt.	109.04	107.98

Table 3. Effect of Added Niacin during Lactation on Sow Performance.

Item	Control	Niacin
No. of litters	113	118
Lactation length, days	19.31	19.07
Lactation wt. loss, lbs.[a]	12.97	18.82
Avg. feed intake, lbs.		
Daily	15.67	15.38
Overall	301.62	293.87

[a](P<.15).

Gilts are moved to a new pen by Bob Goodband, graduate student in swine nutrition.