



ONTARIO PORK

**Ontario Pork Research Final Report; Executive Summary**  
**Neonatal Scours; On-Farm Research Trial**

**Reporting Date: August 26, 2020**

**Introduction:** The majority of suckling pig diarrhea occurs between three and seven days after birth and is associated with specific pathogenic bacteria or viruses. Much less common is diarrhea that occurs in suckling pigs within 48 hours of birth where neither pathogenic bacteria nor viruses are identified. Researchers have been unable to reproduce the syndrome in order to study it in more detail. Attempts to prevent or treat the disease include feedback of piglet feces to late gestation sows, treating the pigs with antibiotics before or after clinical signs are observed, feeding antibiotics to late gestation sows, changing sow gestation and lactation diets, acidifying the water for sows, vaccinating sows for *E. coli*, utilizing a wide variety of disinfectant agents, and combinations of the above. Successful control of this syndrome ranges from complete resolution to at best partial improvement. No single approach is consistently successful.

**Objectives:**

1. To identify whether 40,000 I.U. of oral vitamin D will decrease the incidence of neonatal diarrhea when added to the current prophylactic use of yoghurt administered immediately after birth.
2. To identify if there are any effects on mortality or weaning weights related to the vitamin D treatment.

**Materials and Methods:** The trial occurred on a commercial 550 sow farrow to finish farm in southern Ontario. Neonatal pigs on this farm had scoured within 24 hours of birth intermittently for approximately two years. There had been no response to a wide range of interventions as outlined in the introduction. One half of the 24 sows farrowing weekly were treated orally with four to eight mL's of yogurt within 24 hours of birth which is the intervention currently being applied to attempt to mitigate the diarrhea. The other half of the litters were treated with the identical yogurt product with the addition of 40,000 I.U. of vitamin D administered orally with the yogurt.

Number of pigs treated, number of treatments administered, mortality, and weaning weights were recorded and compared between treatment groups.

**Results and Discussion:** No differences were observed in the variables of interest between the piglets treated with yogurt and those treated with yogurt plus added vitamin D. Treatment rates tended to be higher in piglets treated with yogurt plus vitamin D while death rates and weaning weights were similar between the two groups.

**Conclusions:** There was no improvement in the response to the prophylactic treatment of newborn pigs with early neonatal diarrhea when 40,000 I.U. of vitamin D was added to the existing yogurt prophylaxis.



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**Introduction:** The majority of suckling pig diarrhea occurs between three and seven days after birth and is associated with specific pathogenic bacteria or viruses. Much less common is diarrhea that occurs in suckling pigs within 48 hours of birth where neither pathogenic bacteria nor viruses are identified. Researchers have been unable to reproduce the syndrome in order to study it in more detail. Attempts to prevent or treat the disease on the study farm included feedback of piglet feces to late gestation sows, treating the pigs with antibiotics before or after clinical signs are observed, feeding antibiotics to late gestation sows, changing sow gestation and lactation diets, acidifying the water for sows, vaccinating late gestation sows for *E. coli*, utilizing a wide variety of disinfectant agents, and combinations of the above. Successful control of this syndrome had been unsuccessful to date. There had been an early small improvement in the incidence of the diarrhea with the prophylactic administration of 4- 8 mL's of yogurt to newborn piglets within 24 hours of birth. However, this treatment was not producing a fully satisfactory response.

### **Objectives:**

1. To identify whether 40,000 I.U. of oral vitamin D will decrease the incidence of neonatal diarrhea when added to the current prophylactic use of yoghurt administered immediately after birth.
2. To identify if there are any effects on mortality or weaning weights related to the vitamin D treatment.

**Materials and Methods:** This trial was performed on a commercial 550 sow farrow to finish farm in southern Ontario over eight consecutive weeks of farrowing beginning on December 23, 2019 and ending on February 13, 2020. The last group of trial pigs were weaned on March 12, 2020. Neonatal pigs on this farm had been scouring within 24 hours of

birth for approximately two years. There had been no response to a wide range of interventions including feedback of scour material to gestating sows, various antibiotic treatments administered to sows or pigs or both, dietary nutrient changes to gestating and lactating sow rations, acidifying the water for sows, vaccinating sows for *E. coli*, and changes to standard cleaning and disinfection protocols. In this trial one side of a farrowing room, i.e. one half of the litters from the 24 sows farrowing weekly, were treated orally with four to eight mL's of Astro Original Balkan Style Yogurt within 24 hours of birth. This was the most recent intervention being used to lower the incidence of the diarrhea. Litters from the opposite side of each farrowing room (12 crates) were treated with the identical yogurt product and amount with the addition of 40,000 I.U. of vitamin D mixed into and administered with the yogurt. Treatments were reversed, i.e. administered to the opposite side of the room, when the next group of sows farrowed in a previously treated room.

During the first 6 weeks of the trial, the vitamin D product administered was Vita-D and E (40,000 I.U./mL, Aurora Pharmaceuticals) supplied by Demeter Veterinary Services. When this ran out after the first 6 weeks of the trial, the farm switched the vitamin D source to Wean-D (Glycomyr, 40,000 I.U./mL, Ames, Iowa) which had been donated by the manufacturer. The number of pigs treated, number of treatments administered, mortality, and weaning weights were recorded by the producer and compared between treatment groups.

**Results and Discussion:** No differences were observed in the variables of interest between the piglets treated with yogurt and those treated with yogurt plus 40,000 I.U. of vitamin D. Treatment rates tended to be higher in piglets treated with yogurt plus vitamin D while death rates and weaning weights were similar between the two groups (Table 1). There was no obvious change in the measured variables of interest during the last two weeks of the trial when the source of the vitamin D was changed. Pigs in the yogurt only treatment group were weaned on average at 24.3 days of age (range: 22.1-26.0) and pigs in the yogurt plus vitamin D treatment group were weaned on average at 25.3 days of age (range: 24.1 – 26.7).

There were no submissions of samples to a diagnostic laboratory during the trial period as there was no evidence of a change in the clinical signs in affected litters. A large number of submissions to the Animal Health Laboratory at the University of Guelph over the previous 12 months had failed to demonstrate significant histologic lesions nor were any

pathogenic bacteria or viruses identified in those submissions. This inability to identify lesions or known pathogens is characteristic of this early scour syndrome.

**Table 1. Results of a trial comparing the prophylactic oral treatment of neonatal piglets with 4 to 8 mL's of Astro Original Balkan-Style Yogurt with and without 40,000 I.U. of vitamin D.**

Week	# of piglets		# of Piglets Required Antibiotics		# Deaths	# Weaned	Wean Weight(kg)	
	Yogurt	Yogurt & Vit D	Single Treatment	Multiple Treatments	Related to scours		Total	Average
1	156	0	16	43	11	141	991	7.03
2	147	0	36	15	5	136	1,023.5	7.53
3	148	0	48	66	7	140	951	6.79
4	167	0	23	71	5	147	884.9	6.02
5	161	0	10	60	10	136	978.5	7.19
6	176	0	52	31	14	133	1,065.4	8.01
7	162	0	39	75	3	143	1,152.0	8.06
8	186	0	63	69	14	143	1,148.5	8.03
	1,303	0	287	430	69	1,119	8,195	7.33
1		186	26	17	12	138	1,038.0	7.52
2		162	16	50	11	141	1,105.0	7.84
3		169	25	89	12	143	1,072.0	7.5
4		174	72	61	14	139	1,083.0	7.79
5		155	72	5	3	139	1,148.4	8.26
6		158	41	105	5	142	1,050.5	7.4
7		174	42	79	0	145	1,125.0	7.76
8		151	54	71	16	152	1,028.5	6.77
		1,329	348	477	73	1,139	8,650	7.6

**Conclusions:** There was no improvement in the response to prophylactic treatment of newborn pigs with early neonatal diarrhea when 40,000 I.U. of vitamin D was added to the existing yogurt prophylaxis. Although initially there was an early clinical impression that the yogurt treatment had decreased the incidence of diarrhea, this was later attributed to weekly variation in syndrome severity. It was suggested by the manufacturer of the Wean-D product that the addition of vitamin D could improve intestinal health and local intestinal immunity. No such clinical effects were observed in this study.

Following this trial, a potassium supplement was added to the gestating and lactating sow diets and fibre levels were increased in the gestation ration. This addition of the potassium supplement and added fibre was associated with a steady decrease in the number of litters displaying clinical signs. Presently less than 3 litters per week are being treated for scours within 24 hours of birth.

**Knowledge Transfer:** The original plan regarding knowledge transfer was to present the results of this trial at the Shakespeare Swine Seminar to raise awareness concerning this rare but not unique syndrome of neonatal scours within 24 hours of birth. The presentation was also intended to highlight the efforts of Ontario Pork to promote on-farm clinical trials. The assumption was that this presentation would be picked up and published by the lay press as well. Due to the pandemic, the Shakespeare Swine Seminar has been cancelled and knowledge transfer associated with this project will be limited to this final report and its availability on the Ontario Pork webpage.