

Water-Soluble Plasma Products for Weaned Pigs

Plasma is a critical ingredient in pig prestarter diets due to its high immunoglobulin and amino acid content. However, feed intake may be minimal the first 12-24 hours postweaning, whereas water intake occurs immediately. Therefore, supplying plasma through water lines may be beneficial for pigs immediately postweaning. Solutein™, a water-soluble plasma source manufactured by American Protein Corp., has been tested in several Akey trials to gather information for customers so they can make an informed decision about whether and how to use this product.

Exp. 1 (880 pigs weaned at 16-19 days of age) evaluated the effects of Solutein administered through the water the first 8 d postweaning on nursery pig performance (Table 1). Phase 1 growth performance was poor, and removal rates were high, due to a TGE challenge in the pigs. During Phase 1, Solutein-fed pigs consumed more feed, grew faster, and utilized feed more efficiently than controls. During the next 11 days (Phase 2), only the first 3 days of which pigs were fed Solutein, no differences in piglet growth or efficiency were detected. However, fewer starve-out pigs were removed from Solutein treated pens in Phase 2 (Table 1).

Table 1. Effect of Solutein Feeding on Nursery Pig Performance

Item	Phase 1		Phase 2	
	Control	Solutein	Control	Solutein
Start wt, lb	10.7	10.8	12.2	12.9
End wt, lb	12.0	12.8	18.1	18.7
ADG, lb ^a	0.27	0.43	0.54	0.54
ADF, lb ^a	0.33	0.40	0.67	0.68
F/G ^b	1.65	0.94	1.26	1.26
Mortality, %	1.80	0.04	0.67	0.56
Removed, % ^c	2.43	0.54	9.54	2.08

^aPhase 1 treatment differs, P<.001. ^bPhase 1 treatment differs, P<.03. ^cPhase 2 treatment differs, P<.01.

In Exp. 2 (880 pigs weaned at 16-19 days of age), we evaluated the effects of duration of Solutein feeding through the water lines on nursery pig performance. Performance of control pigs (no Solutein) was compared with performance of pigs fed Solutein for 2, 4, or 8 days postweaning (Table 2). During Phase 1 (first 5 days postweaning), feeding Solutein for less than 4 days had no impact on growth performance or feed efficiency, whereas pigs fed Solutein for 4 or 8 days had improved feed intake, growth rate and F/G (Table 2). Feeding Solutein for the first 2 days or more postweaning significantly reduced piglet mortality compared with controls.

Table 2. Effect of Duration of Solutein Feeding on Nursery Pig Performance (Phase 1)

Item	Duration of Solutein Feeding, d			
	0	2	4	8
Start wt, lb	11.2	11.0	11.1	11.1
End wt, lb	12.9^a	12.5^b	13.1^{ac}	13.3^c
ADG, lb	0.31^a	0.28^a	0.39^b	0.42^b
ADF, lb	0.34	0.32	0.37	0.38
F/G	1.16^d	1.13^d	0.95^e	0.93^e
Mortality, %	1.39^f	0.00^g	0.00^g	0.00^g
Removed, %	2.06	1.43	0.95	0.95

^{abc} Treatment differs, P<.09. ^{dc} Treatment differs, P<.03. ^{fg} Treatment differs, P<.001.

Data from Phase 1 and 2 for Exp. 2 are combined in Table 3. Growth performance of pigs for the first 14 days postweaning was not affected by Solutein feeding, although feed efficiency was improved for pigs fed Solutein for at least the first 4 days postweaning. Mortality was improved in all Solutein treatments (Table 3).

Table 3. Effect of Duration of Solutein Feeding on Nursery Pig Performance (Phase 1 & 2)

Item	Duration of Solutein Feeding, d			
	0	2	4	8
Start wt, lb	11.2	11.0	11.1	11.1
End wt, lb	18.5	18.0	19.0	18.9
ADG, lb	0.51	0.49	0.56	0.55
ADF, lb	0.56	0.54	0.57	0.57
F/G	1.11^a	1.10^{ab}	1.03^b	1.04^b
Mortality, %	1.86^a	0.00^b	0.00^b	0.46^b
Removed, %	5.30	5.56	5.04	4.18

^{ab} Treatment differs, P<.06.

The overall performance of pigs from Exp. 2 is summarized in Table 4. For the entire 45-day nursery period, Solutein had to be fed for a minimum of 8 days postweaning to influence piglet weight gain and closeout weight. In the final analysis, Solutein did not affect morbidity or mortality, although there were numeric improvements in mortality rate when Solutein was fed (Table 4).

Table 4. Effect of Duration of Solutein Feeding on Nursery Pig Performance (Overall)

Item	Duration of Solutein Feeding, d			
	0	2	4	8
Start wt, lb	11.2	11.0	11.1	11.1
End wt, lb	54.3^{ab}	52.8^a	54.8^{bc}	55.9^c
ADG, lb	0.94^d	0.91^d	0.95^{de}	0.97^e
ADF, lb	1.31^{ab}	1.26^a	1.34^b	1.35^b
F/G	1.40	1.39	1.41	1.38
Mortality, %	2.32	0.91	1.82	0.93
Removed, %	6.24	6.93	6.41	6.02

^{abc} Treatment differs, P<.09. ^{de} Treatment differs, P<.06.

In Exp. 3 and 4 (total of 412 pigs weaned at 16-19 days of age), Solutein was fed in gruel (not water lines) to lightweight pigs to evaluate effects on mortality, morbidity, and growth performance. In the first 7.5 days postweaning, neither growth performance nor mortality were improved when Solutein was administered in gruel (Table 5).

Table 5. Effect of Solutein Fed via Gruel d 0-7 Postweaning on Pig Performance (Phase 1)

Item	Control	Solutein
Start wt, lb	8.4	8.3
End wt, lb	12.1	11.7
ADG, lb	0.48	0.46
ADF, lb	0.47	0.45
F/G	0.98	0.99
Mortality, %	1.57	1.41
Removed, %	0.00	0.36

When we examined the impact of feeding Solutein in gruel in Phase 1 on subsequent performance in Phase 2 when pigs were fed a common diet and no Solutein, performance was not affected by previous Solutein treatment (Table 6).

Table 6. Effect of Solutein Fed via Gruel d 0-7 Postweaning on Pig Performance (Phase 2)

Item	Control	Solutein
Start wt, lb	12.1	11.8
End wt, lb	17.5	17.0
ADG, lb	0.54	0.52
ADF, lb	0.73	0.72
F/G	1.36	1.39
Mortality, %	1.23	0.00
Removed, %	0.32	2.15

Summary of Akey research and experience with Solutein:

1. Best results with Solutein feeding were achieved by administering it through water lines for the first 4 to 8 days postweaning.
2. Results suggest 0.5 to 1.5 lb heavier pigs are possible by the end of a 45-d nursery period.
3. Solutein may be most effective in health-challenged herds. Field responses in TGE affected pigs are especially encouraging.
4. No apparent benefits were seen when Solutein was mixed with gruel rather than administered via water lines.
5. Solutein feeding requires a specialized Dositron applicator capable of higher injection rates (5-10%) than normal water medicators.
6. Water line maintenance when applying Solutein is critical. If water lines are not kept clean, Solutein application may result in clogged water lines.

The cost of feeding Solutein makes this technology one that should be carefully considered prior to application. Feeding it for 8 days at recommended levels costs ~\$0.80/pig. This cost must be weighed against returns (e.g., extra closeout weight and potentially fewer dead pigs).