

Effects Of An Additional Injection Of Iron Administered To Piglets On Hemoglobin Concentration, Growth Performance, And Carcass Characteristics Through Market Weight

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Background and Objectives

Questions about the need of young pigs for iron remain even after a century of recognition of its need. An experiment was conducted to evaluate the effects of an additional injection of iron dextran (Uniferon, Pharmacosmos Inc.) administered at d 6-8 of age.

Material and Methods

Pigs (n = 144) were paired by sex and bodyweight (BW) within litter and randomly assigned to either a control (CON) or added injection (+Fe) treatment. All pigs received 200 mg Fe intramuscularly < 24 h after birth; the +Fe pigs received an additional 200 mg Fe injection at d 6-8. Pigs were weaned at 22-24 days, housed 6 pigs/pen, and received a common diet formulated to meet or exceed NRC (2012) requirement estimates relative to BW until slaughter. At the time of slaughter, 1 pig/pen (n = 12 pigs/treatment) was selected for carcass characteristic measures. Data were subjected to analysis of variance with the individual pig as the experimental unit.

Results

The +Fe pigs had greater hemoglobin concentration (Hb) at weaning (13.1 vs. 10.7 g/dL, P < 0.0001) and end of the 5-week nursery period (12.1 vs. 11.7 g/dL, P = 0.01) compared to CON pigs. Overall, +Fe pigs had an ~ 4% increase in average daily gain (ADG; P = 0.04) from weaning to slaughter resulting in a heavier BW at the end of the experiment (115.77 vs. 112.79 kg; P = 0.04). The +Fe pigs had ~ 2.5% heavier hot and cold carcass weights and heavier trimmed loin (10.67 vs. 9.95 kg; P = 0.04) compared to the CON pigs.

Discussion and Conclusion

Administering an additional iron injection resulted in greater Hb at weaning and the end of the nursery that was associated with improved growth performance from weaning to slaughter weight and increased carcass measures at slaughter.

Table 1

Effects of an additional iron injection administered at d 6-8 on hemoglobin (Hb, g/dL) concentration¹

¹ Data represent 144 pigs or 72 pigs/treatment. All pigs received an initial iron injection (200 mg Fe) at birth; the +Fe group received an additional iron injection (200 mg Fe) at enrollment.

² Nursery period was about 5 weeks postweaning.

TIME POINT	TREATMENT			
	CON	+FE	SEM	P-VALUE
Birth (d0)	9.9	9.9	0.214	0.93
Enrollment (d 6-8)	9.1	8.9	0.122	0.13
Weaning (d 22-24)	10.7	13.1	0.152	< 0.0001
End of Nursery ²	11.7	12.1	0.129	0.01
End of Study	11.9	12.0	0.136	0.66

Table 2

Effects of an additional iron injection administered at d 6-8 on pig bodyweight and growth performance^{1,2}

ITEMS	TREATMENT			
	CON	+FE	SEM	P-VALUE
Bodyweight, kg				
Birth (d 0)	1.53	1.55	0.01	0.53
Enrollment (d 6-8)	2.87	2.85	0.01	0.44
Weaning (d 22-25)	7.44	7.40	0.06	0.67
Wk 2	10.51	10.85	0.11	0.03
Wk 4	19.08	19.96	0.22	0.01
Wk 5	27.63	28.15	0.27	0.17
Wk 7	40.10	40.77	0.35	0.18
Wk 9	53.69	54.72	0.49	0.13
Wk 11	67.28	68.49	0.60	0.15
Wk 13	81.03	82.70	0.76	0.11
Wk 15	91.77	93.63	0.83	0.11
Wk 17	103.89	106.88	0.97	0.03
End of study	112.79	115.77	1.03	0.04
Average Daily Gain, kg				
Preweaning	0.29	0.29	0.004	0.73
Nursery	0.55	0.56	0.01	0.10
Finisher	0.91	0.94	0.01	0.05
Wean to end of study	0.81	0.83	0.01	0.04
Average daily feed intake, kg³	1.88	1.90	0.04	0.74
Gain/feed ratio³	0.43	0.44	0.004	0.33

¹ Data represent 144 pigs or 72 pigs/treatment. All pigs received an initial iron injection (200 mg Fe) at birth; the +Fe group received an additional iron injection (200 mg Fe) at enrollment.

² Preweaning period included enrollment to weaning; nursery period included weaning to about Wk 5; finisher period included Wk 5 to slaughter.

³ Average daily feed intake and gain/feed ratio are for the entire wean to end of study period.

Table 3

Effects of an additional iron injection administered at d 6-8 on carcass traits¹

ITEMS	TREATMENT			
	CON	+FE	SEM	P-VALUE
Slaughter Weight, kg	113.13	114.72	1.75	0.53
Hot Carcass Weight, kg	82.75	84.85	1.49	0.33
Cold Carcass Weight, kg	80.93	82.99	1.48	0.34
Carcass Length, cm	81.73	82.37	0.66	0.50
Backfat Depth, cm				
First rib	3.37	3.43	0.22	0.84
Last rib	2.16	2.60	0.23	0.19
10th rib	1.82	1.85	0.15	0.88
Last lumbar	1.57	1.50	0.14	0.76
Loin Muscle Area, cm²	44.06	45.32	1.69	0.60
Absolute Primal Cut, kg				
Boston butt	3.72	3.71	0.08	0.96
Picnic shoulder	3.90	3.98	0.13	0.65
Loin	9.95	10.67	0.23	0.04
Belly	6.34	6.30	0.16	0.87
Spare rib	1.55	1.63	0.04	0.14
Ham	9.04	9.28	0.18	0.35

¹ Treatment means are reported as least squares means from 12 pigs per treatment; data is based on the left side of the carcass. All pigs received an initial iron injection (200 mg Fe) at birth; the +Fe group received an additional iron injection (200 mg Fe) at enrollment.