1959

A Comparison of Different Iron Treatments for the Prevention of Anemia in Baby Pigs

Richard C. Wahlstrom
South Dakota State University

A COMPARISON OF DIFFERENT IRON TREATMENTS FOR THE PREVENTION OF ANEMIA IN BABY PIGS 1/

Richard C. Wahlstrom and Eldon W. Juhl

Data from this station presented at the 1958 Swine Field Day indicated that both oral iron pills and injectable iron-dextran were effective in preventing anemia in young pigs. The pigs used in the 1958 trials had been moved to rye pasture when 7 to 10 days of age and were weaned at 4 weeks of age.

Many swine producers are now operating under a confinement system where the pigs remain on concrete for their entire life period. The work reported here was conducted to determine the effectiveness of iron pills given orally, injectable iron-dextran and injectable peptonized iron for preventing anemia in pigs raised on concrete until weaned at 4 weeks of age. The effect of time of injection and amount of iron-dextran were also studied both in pigs reared in confinement to 4 weeks and in pigs reared on pasture to 8 weeks of age.

Experimental Plan

A total of 372 purebred and cross-bred pigs were used in this experiment conducted in the spring of 1959. All pigs were farrowed in concrete floored pens. In trials 1 and 2 the pigs were confined indoors during the 28 day trial while in trial 3 the pigs were moved to rye pasture when they were about 3 weeks old and remained on the trial until weaned at 56 days of age. In all trials pigs within litters were randomly assigned to the different treatments. The treatments used in each trial are given along with the results in tables 1, 2 and 3. Creep rations were not fed so as to limit the pig's source of iron to that received in the sow's milk,

One of the best measures of the degree of nutritional anemia is the blood hemoglobin level. In order to obtain this information blood samples were obtained at various times from the marginal ear vein of 128 pigs used in trials 1 and 2.

Summary and Results

The average weights and blood hemoglobin levels of the pigs in trial 1 are shown in table 1. Pigs injected with iron-dextran were slightly heavier at 28 days and had higher hemoglobin levels at 10, 21 and 28 days than did the pigs receiving the iron tablet or the injection of peptonized iron. The iron tablets given orally at 1, 10 and 21 days of age maintained hemoglobin at about 8 gms. per 100 ml. of blood. This appeared to be adequate for the prevention of anemia. The intramuscular injection of peptonized iron however did not maintain hemoglobin level satisfactorily. Several of the pigs were anemic at 21 days when a second injection was given. Mortality was also much higher in the group of pigs given this treatment. In most cases death occurred during the first two days after injection.

1/ Presented at South Dakota State College Swine Field Day, August 28, 1959.

Table 1

The Effect of Three Methods of Iron Administration on Weight Gains and Hemoglobin Levels of Nursing Pigs

Treatment	Oral iron [a]		Iron-dextran [b]		Peptonized iron [c]	
Age at Treatment	1,10 and 21 days		1 day		1 and 21 days	
	Wt.	Hb.[d]	Wt.	Hb.	Wt.	Hb.
No. of pigs	64	24	63	23	42	15
1 day	2.9	11.03	2.9	10.43	3.0	10.01
10 days	6.5	8.39	7.1	10.34	6.9	8.38
21 days	11.5	7.98	12.2	9.93	11.7	6.41
28 days	15.2	8.0	16.0	8.90	15.2	7.76
Total gain, lbs.	12.3		13.1		12.2	
Mortality, %	6		7		37	

[a] Each tablet contained 292 mg. reduced iron

[b] Two cc. "Armidexan", provided 50 mg. of elemental iron per cc.

[c] One cc. "PA-12", provided 44 mg. of elemental iron per cc.

[d] Grams of hemoglobin per 100 cc. of blood

Tables 2 and 3 give the results of trials 2 and 3 in which iron-dextran was injected at different times and in different amounts. There was very little difference in weight gains or mortality of pigs receiving the different treatments.

In trial 2 where hemoglobin levels were determined it was observed that the hemoglobin declined the first two days regardless of treatment. When iron treatment was delayed until 7 days many pigs were beginning to show anemia as indicated by their hemoglobin content. Injection of 150 mg. of iron resulted in higher hemoglobin levels that were maintained over a longer period of time.

Table 2. The Effect of Intramuscular Injections of Iron-Dextran on Weight Gains and Hemoglobin Levels of Nursing Pigs

Elemental iron per treatment	150 mg.		100 mg.		100 mg.	
Age at treatment	1 day		7 days		1 and 21 days	
	Wt.	Hb.	Wt.	Hb.	Wt.	Hb.
No. of pigs	36	23	35	22	35	21
Birth	3.3	9.90	3.4	10.66	3.2	10.86
1 day	3.5	8.86	3.6	8.94	3.5	9.13
2 days	3.8	8.57	4.0	8.42	3.8	8.98
7 days	6.0	9.66	6.2	6.04	6.1	9.58
14 days	9.4	11.26	9.3	10.08	9.4	10.62
21 days	12.4	10.97	12.4	9.64	12.3	8.91
28 days	15.7	10.54	15.8	9.01	15.6	10.58
Total gain, lbs.	12.4		12.4		12.4	
Mortality, %	6		8		9	

Table 3. Effect of Time of Injection and Level of Iron-Dextran on Weights of Pigs Weaned at 56 Days of Age

Elemental iron per treatment Age at treatment	150 mg. 1 day	100 mg. 1 day	100 mg. 7 days	100 mg. 1 and 21 days
No. of pigs	14	13	36	34
Av. initial wt., lb.	3.0	3.5	3.3	3.3
Av. 56 day wt., lb.	28.0	30.7	28.6	28.7
Av. total gain, lb.	25.0	27.2	25.3	25.4