

Effect of Increasing GleptoForte Dosage in Newborn Pigs on Sow and Litter Performance

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Introduction

Anemia susceptibility is a significant issue in newborn piglets due to fast growth rates and limited storage at birth. Inadequate stores of iron increase lethargy and mortality rates resulting from decreased counts of circulating red blood cells. Gleptoferron is an iron supplement used in the injectable product GleptoForte. The appropriate injection dosage of GleptoForte is unknown.

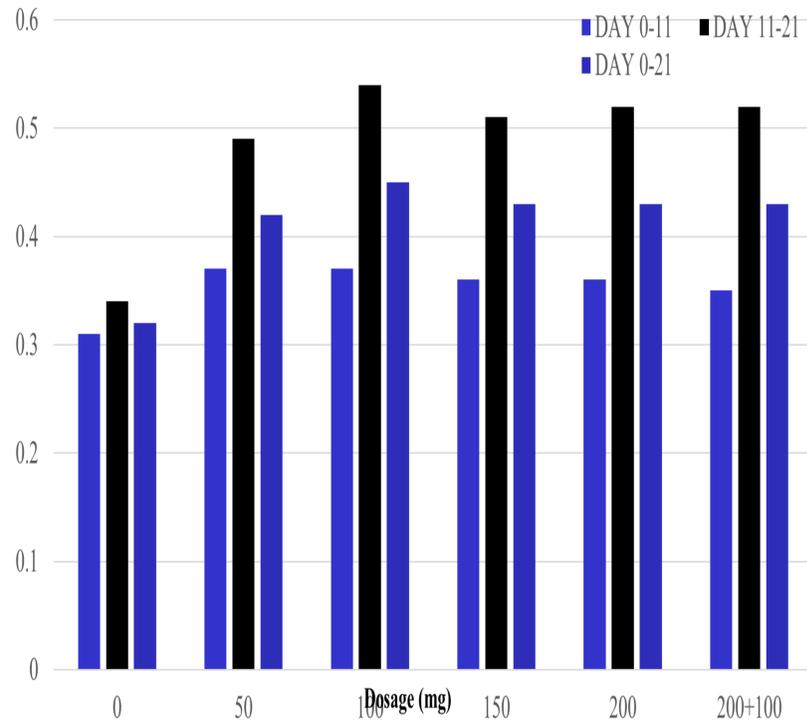
Objective

The research objective was to analyze the effect of increasing GleptoForte dosage on piglet performance.

Materials and Methods

A total of 28 litters were used to study the effects of increasing GleptoForte injection dosage on pre-weaning piglet performance during the 21-d trial. A total of 56 pigs were allotted to each of the treatment groups which consisted of increasing levels of GleptoForte to reach levels of 50, 100, 150, 200, 200 plus a booster on d 11, and a negative control receiving no iron. Weights were taken on d 11 and at weaning to calculate ADG. Blood was taken on d 3, 11, and at weaning from one barrow per treatment from each litter. Hemoglobin, Hematocrit, Serum Fe, and Total Iron Binding Capacity were the blood criteria measured.

ADG



BODY WEIGHT

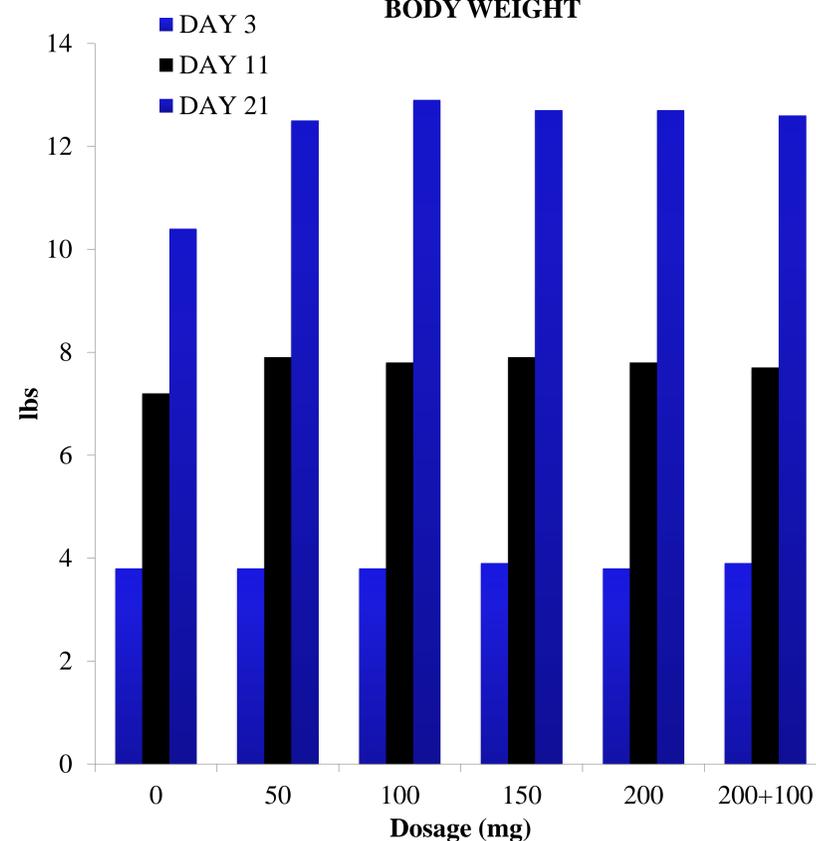


Table 2. Effects of GleptoForte dosage on suckling pig hematological criteria¹

	Dosage, mg/m ²						SEM	Probability, P <		
	0	50	100	150	200	200 + 100 ³		Linear ⁴	Quadratic ⁵	200 vs. 200 + 100 ⁶
Hgb (g/dl) ⁷										
d 3 ⁸	8.4	8.3	8.3	8.3	8.2	8.4	0.250	0.719	0.850	0.613
d 11 ⁹	5.7	8.3	9.9	10.1	10.7	10.5	0.235	0.001	0.001	0.703
d 21	4.6	6.8	9.3	11.3	12.0	12.8	0.217	0.001	0.001	0.011
Hct (%) ⁷										
d 3	28.0	27.1	27.6	27.4	27.4	28.0	0.806	0.809	0.749	0.699
d 11	20.0	29.2	34.3	35.8	36.5	36.2	0.660	0.001	0.001	0.722
d 21	16.0	23.4	30.9	37.3	38.8	40.9	0.715	0.001	0.001	0.046
Serum Fe (µg/dl) ⁷										
d 3	26	24	30	29	25	24	3.82	0.816	0.463	0.838
d 11	19	29	101	149	162	157	8.73	0.001	0.558	0.675
d 21	22	15	25	53	86	113	7.85	0.001	0.001	0.019
TIBC (µg/dl) ⁷										
d 3	252	248	216	236	242	223	13.78	0.454	0.166	0.351
d 11	698	536	442	417	406	421	22.77	0.001	0.001	0.669
d 21	726	667	519	479	415	398	27.43	0.001	0.3446	0.670

¹A total of 336 suckling pigs (DNA 241 × 600) were used in a 21 d suckling experiment with 12 pigs per sow and 2 pigs within each sow individually treated for a total of 56 pigs per treatment. All barrows were bled at each of the timepoints to measure hematological criteria.

²GleptoForte (Ceva Animal Health, LLC., Lenexa, KS) dosage administered 3 d after farrowing.

³Pigs were administered 200 mg at beginning of trial and 100 mg 11 d after farrowing.

⁴Linear comparison of 0 mg to 200 mg dosage.

⁵Quadratic comparison of 0 mg to 200 mg dosage.

⁶Pairwise comparison between mean of 200 mg and 200 + 100 mg treatments.

⁷Tri × day interaction (P < 0.001).

⁸Represents 3 d after farrowing.

⁹Represents 11 d after farrowing.

Conclusions

- 100 mg of GleptoForte was the most effective injection level in terms of ADG.
- Blood criteria were improved by administering a d 11 booster of 100 mg to the 200 mg + 100 mg treatment group but there was no effect (p<0.005) on growth performance.
- The poorest growth performance and blood parameters were observed in the treatment group not given any supplemental iron.

Results

Linear and quadratic effects (p<0.005) were observed on piglet ADG from d 3 to 21 with increasing GleptoForte dosage. The 200 mg + 100 mg injection showed no improvement in performance compared to the 200 mg treatment during all three periods. Hemoglobin and Hematocrit produced linear and quadratic effects (p<0.005) with measures increasing as dosage increased.

References

1. Mateos GG et al. Trace Minerals. *Redefining Mineral Nutrition*. 2012; 41:43.
2. Jolliff, J.S. and Mahan, D.C. Effect of injected and dietary iron in young pigs on blood hematology and postnatal pig growth performance. *J. Animal Science*. 2011; 4068-4080.
3. Starzyński, RR et al. Iron supplementation in suckling piglets: how to correct iron deficiency anemia without affecting plasma hepcidin levels. *PLoS one*. 2013;e64022.