Effect of increasing GleptoForte (source of injectable Fe) dosage in newborn piglets

S. Davis, H. Williams, MS; J. DeRouchey, MS, PhD.; J Woodworth, MS, PhD.; M. Tokach, MS, PhD; S.S. Dritz, MS, PhD, DVM; R. Goodband, MS, PhD; A. Holtcamp, DVM.
Department of Diagnostic Medicine/Pathobiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS;
Ceva Animal Health, LLC., Lenexa, KS

Department of Animal Sciences and Industry, Kansas State University, Manhattan

Introduction

Iron deficiency is a big problem in newborn piglets due to the lack of appropriate iron storage at birth and the rapid rate of growth before weaning age. It is very widely acknowledged that the usage of iron supplementation at processing is extremely important. Forgetting this step or missing a pig can cause increased health issues even to the point of mortality. The commonly used 200 mg in one injection has now become somewhat of a concern due to the possibility of a low level provided as compared to adding a booster prior to weaning. Gelptoforte (Ceva Animal Health, LLC., Lenexa, KS) is an injectable iron used to prevent anemia in newborn piglets that utilizes gleptoferron. Data available for the amount of Gleptoforte needed in modern genotypes is scarce.

Objective

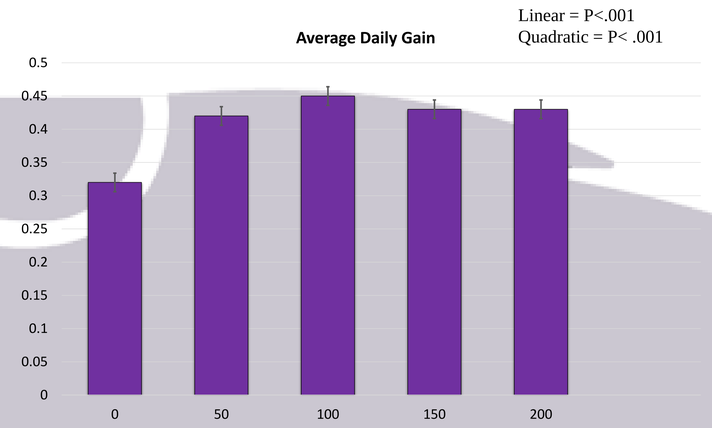
Determine the effects of GleptoForte dosage on nursing piglets and subsequent nursery blood and growth parameters.

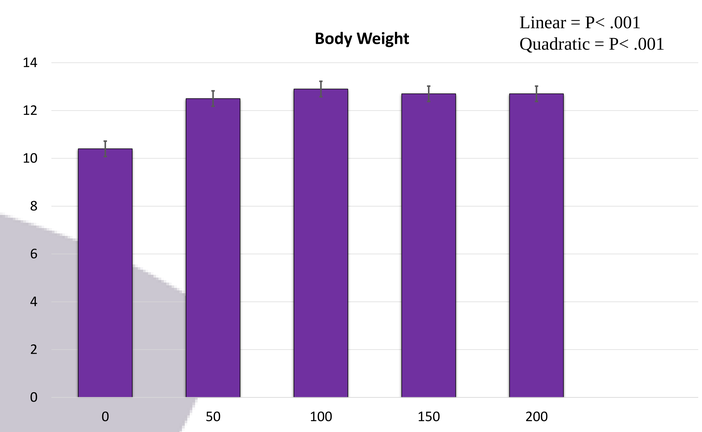
Materials and Methods

- 336 newborn piglets (DNA 241 × 600, initially 3.83 ± 0.114 lb BW)
- 21 day farrowing study to evaluate the effects of increasing amounts of Gleptaforte in newborn piglets performance and blood parameters
- 28 litters- number equalized on day of farrowing
- 3 days after birth, all piglets were weighed
- By randomized design, six barrows and six gilts where allotted to a treatment
  - Total of 56 piglets per treatment
- 6 possible treatments could be applied
  1. 0 mg (0mL)*
  2. 50 mg (.25mL)*
  3. 100 mg (.50mL)*
  4. 150 mg (.75mL)*
  5. 200 mg (1mL)*
  6. 200 mg + 100 mg booster at day 11 (1mL +.50mL)*

  ** 1mL of Gleptaforte contained 200mg of iron*
- Piglets weighed at processing (day 3), day 11, and at weaning (day 21) to calculate average daily gain (ADG) during farrowing
- Blood collection was done via jugular venipuncture with one barrow per treatment per litter. There were taken on day 3, day 11, and day 21.
- Blood collections were testing for Hemoglobin (Hgb), Hematocrit (Hct), Serum Iron, and Total Iron Binding Capacity (TIBC)
- Lactation feed contained 110mg/kg added iron from ferrous sulfate

Results





Effects of Gleptoforte dosage on suckling pig hematological criteria

	Dosage, mg/ml[1]							Probability, *P* <		
	0	50	100	150	200	200 + 100[3]	SEM	Linear[3]	Quadratic[4]	200 vs. 200 + 100[5]
Hgb (g/dl)[6]										
d 3	8.4	8.3	8.3	8.3	8.2	8.4	0.250	0.719	0.850	0.613
d 11	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 (%)[6]										
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)[6]										
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)[6]										
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

[1]Gleptoforte (Ceva Animal Health, LLC., Lenexa, KS) dosage administered 3 d after farrowing.
[2]Pigs were administered 200 mg at beginning of trial and 100 mg 11 d after farrowing.
[3]Linear comparison of 0 mg to 200 mg dosage.
[4]Quadratic comparison of 0 mg to 200 mg dosage.
[5]Pairwise comparison between mean of 200 mg and 200 + 100 mg treatments.
[6]Trt × day interaction (P < 0.001).

Discussion/Conclusion

- Day 21 Body weight and ADG both increased as the doses of Gleptaforte increased
- Nothing showed that the additional booster at 11 days improved ADG or Body Weight
- All blood parameters show that the 0mg dose gave the lowest value and 200mg dose gave the highest values, respectively
- On day 21, the blood collections for Hgb, Hct, and Serum Iron, all showed a significant difference between the 200mg dose and the 200mg + 100mg dose with the 200mg + 100mg being the greater
- However, TCIB, body weight, or ADG did not show any difference between the 200mg dose and the 200mg + 100mg dose