The Effects of Increasing GleptoForte in Newborn Piglets

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Introduction

- Anemia in newborn piglets is an issue as it decreases production due to severe growth impairment.
- This research came about the discussion if the current iron supplement could be replaced with an alternative and if the alternative could be given in a more appropriate dosage to increase iron levels in newborn piglets.
- A 200 mg injection of iron supplement Dextran during piglet processing, is common among swine farmers.
- The purpose of the iron injection is to improve growth rate, blood criteria, and to prevent anemia in piglets.
- GelptoForte (Ceva Animal Health, LLC., Lenexa, KS) is an alternative injectable iron that contains gleptoferron, such as Dextran, and is utilized to prevent anemia in newborn piglets.

Objective

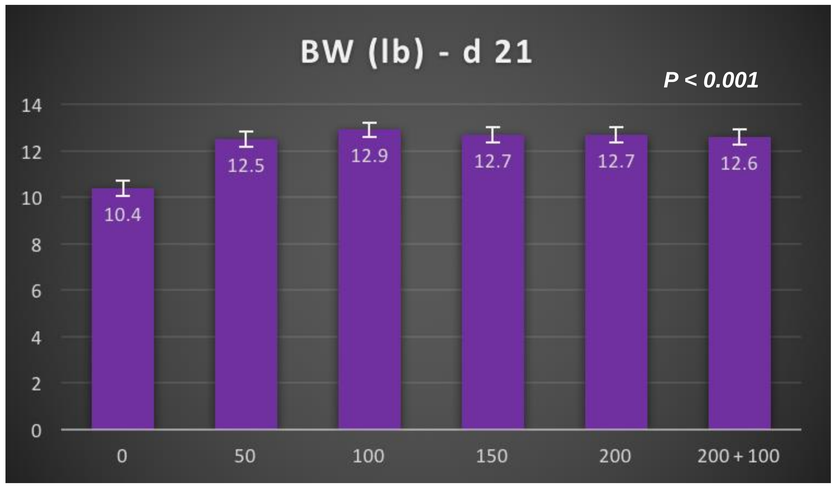
Determine the effects of increasing GleptoForte dosage on newborn piglet and the subsequent blood and growth criteria.

Materials and Methods

- 336 newborn pigs: 28 litters, 12 pigs per litter, 56 per treatment
- were used (DNA 241 × 600, initially 3.83 ± 0.114 lb BW)
- Over a 21-d farrowing study, effects of increasing Gleptoforte (Ceva Animal Health, LLC., Lenexa, KS) were evaluated.
- On the day of processing (d3), all piglets were weighed and distributed: six barrows and six gilts per litter to each treatment in a completely randomized design.
- Treatments consisted of: a negative control (omg) and increasing levels of iron from GleptoForte including 50mg, 100mg, 150mg, 200mg, or 200mg and an additional 100 mg booster at d11 of farrowing.
- 1 ml of Gleptoforte equaled 200 mg of iron, thus injection dosages were 0ml, 0.25ml, 0.50ml, 0.75ml, 1.0ml, or 1.0ml plus the 0.50ml booster for each treatment, respectively.
- Piglets were weighed at processing, on d11, and day of weaning to gather AGD criteria during farrowing.
- One barrow from each treatment per litter were utilized for blood collection via jugular venipuncture on d3, d11, and d21.
- Blood criteria measured included: Hemoglobin (Hgb), Hematocrit (Hct), Serum Fe, and Total Iron Binding Capacity (TIBC).
- Lactation feed contained 110 mg/kg added iron from ferrous sulfate.

Results

Linear: 0.001 Quadratic: 0.001



Linear: 0.001 Quadratic: 0.001

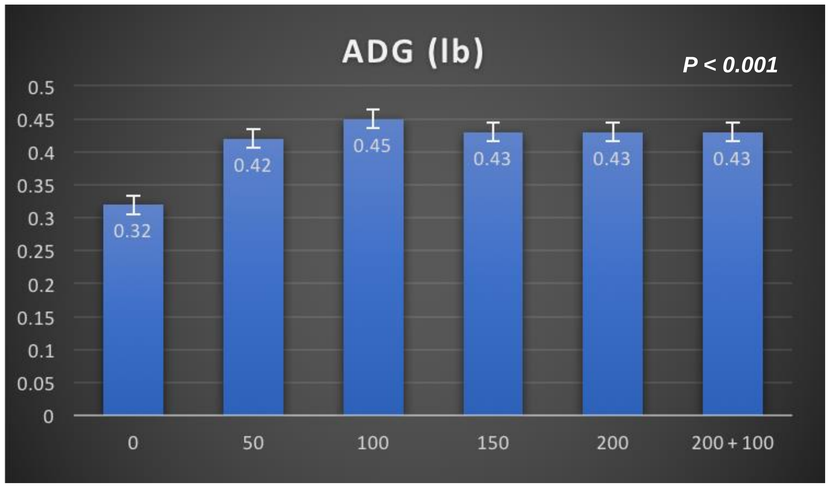
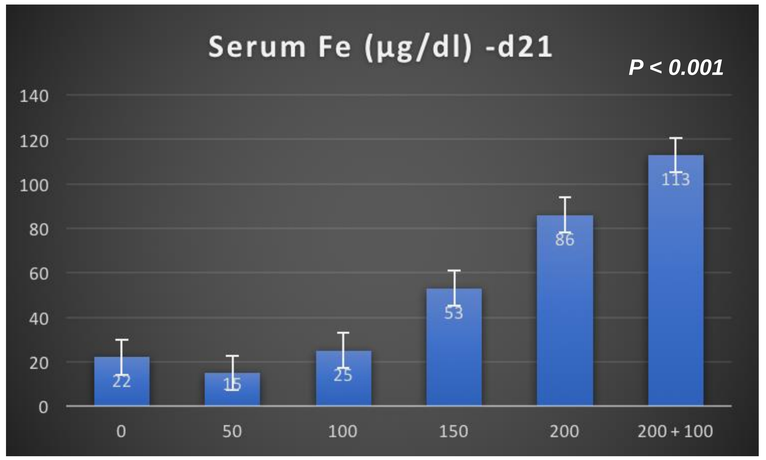


TABLE OF OTHER RESULTS

Linear: 0.001 Quadratic: 0.001



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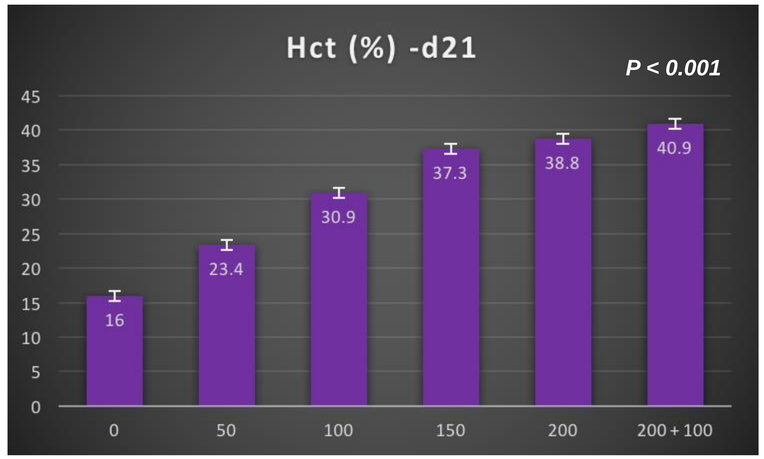

Conclusion

Observation of growth criteria from d3 to d11, to d21 showed ADG and BW improving (P=0.001) as the dosage of GleptoForte increased. This trend excludes the 6th treatment (200mg on d3 with a booster of 100mg on d11) which did not show a significant improvement (P=0.001) in comparison to the 5th treatment (200mg of GleptoForte) for either ADG or BW criteria. Hemoglobin (Hgb) levels observed from d3 to d21 blood samples did not show a common trend. Despite this, Hgb did show increasing (P=0.001) levels with 150mg or higher dosage including treatment 6, across d3 to d21. Blood samples gathered from d21 alone showed an increasing (P=0.001) trend with increasing dosages. Hematocrit (Hct) levels from blood samples were similar to that of the trend from Hgb levels which showed no improvement (P=0.001) from d3 to d21 until 150mg of GleptoForte. D21 Hct specifically showed increasing (P=0.001) levels as the dosage increased. Treatment 6 showed significant benefits (P=0.01) compared to treatment 5. Serum Fe levels addressed from d3 to d21 showed no increasing (P=0.001) trends. However, Serum Fe levels did increase (P=0.001) as GleptoForte dosage increased. Serum Fe levels on d21 also showed significant benefits (P=0.001) from treatment 6 compared to treatment 5. Finally, Total Iron Binding Capacity (TIBC) showed increasing (P=0.001) levels from d3 to d21 for each treatment. Despite this, there were no common trends between the values as dosages increased at any given day blood samples were taken.

In conclusion, 200mg+100mg of GleptoForte improved Hemoglobin and Hematocrit criteria, but showed no increasing improvement compared to 200mg alone.