

## Nor-Grape® Supplementation of Sows Improves Colostrum Quality and Boosts Performance of Piglets

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### Takeaways:

- Fetal and piglet growth is a priority for the sow during gestation-lactation
- Antioxidants are transmitted by the sow to baby pigs after birth
- Nor-Grape® is a natural source of characterized and standardized antioxidants
- 50 ppm dietary Nor-Grape®, fed in late gestation and lactation, increased colostrum quality and piglet performance
- Via feeding sows, Nor-Grape® boosted antioxidant defenses of piglets, thus enabling enhanced performance
- Feeding Nor-Grape® to sows resulted in significant piglet growth without use or mobilization of additional resources
- Nor-Grape® can be a significant and dependable tool for pork producers

### Fetal growth is prioritized during gestation and piglet nutrition is prioritized during lactation

In mid and late gestation, nutrients are prioritized for fetal growth, at the expense of maternal weight gain (Theil et al., 2012). In addition, during late gestation, nutrients are prioritized for fetal and mammary growth and colostrum production. Top priorities during lactation are continuous mammary growth and milk production. These priorities ensure trans-generational nutrient transfer.

### Antioxidants are transferred to baby pigs by the sow

Antioxidants and nutrients are transmitted to baby pigs via sow colostrum and milk (Theil et al., 2014, Lipko-Przybylska & Kankofer, 2012). A significant increase in antioxidant concentration in colostrum and milk is evident between 12 and 72 hours post parturition (Lipko-Przybylska & Kankofer, 2012). Such transfer of protection is necessary as weaning induces a transient oxidative stress (Buchet et al., 2017), which under non-optimal weaning conditions may require more diversified antioxidant measures or tools.

### Antioxidant diversity means increased antioxidant protection

Supplementation with a standardized Nor-Grape® in late gestation and lactation can increase piglet defenses against various oxidative challenges enabling piglets to weather weaning obstacles, thrive during the weaning period, and enable a successful post-weaning.

### Nor-Grape® is a characterized and standardized source of antioxidants

Nor-Grape®, a grape extract, is a characterized and standardized 100% natural feed additive. Polyphenols, anthocyanins, procyanidins, malvidin, and gallic acid make up the standardized components of Nor-Grape®, the antioxidant activity of which is guaranteed.

### Nor-Grape® improves colostrum quality and piglet performance

A study was conducted to evaluate the effect of feeding a dry grape extract, Nor-Grape®, to sows on colostrum/milk quality and piglet performance. One hundred and fifty nine (159) Genesus F1 x PIC 280 Duroc sows were fed a diet supplemented with 50 ppm Nor-Grape from 6 days prior to 18 days post farrowing, and compared to 146 Genesus F1 x PIC 280 Duroc sows fed an un-supplemented control diet.

There were no differences in the number of piglets born, number of piglets born alive, % stillborn or % mummies (data not shown). Feeding Nor-Grape® to sows through 18 days post farrowing made a significant difference in piglet performance. Average piglet weight at weaning (Figure 1: +284 g;  $P < 0.001$ ) and litter mean weight (Figure 2: +2.9 Kg;  $P < 0.05$ ) were significantly higher for piglets from sows fed Nor-Grape®. There were no significant differences in mean piglet live weight at birth or litter weight at birth or number of weaned piglets/litter (Data not shown).

Figure 1: Average weight at weaning (kg)

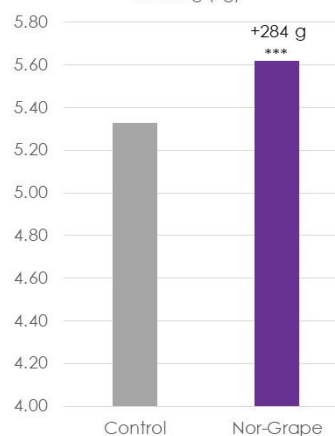
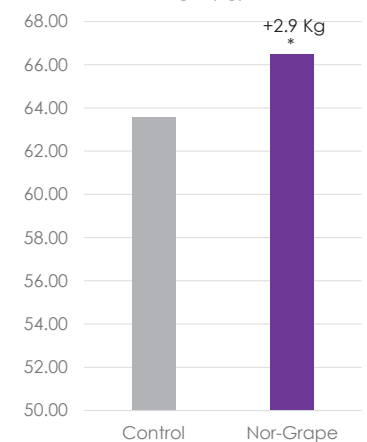
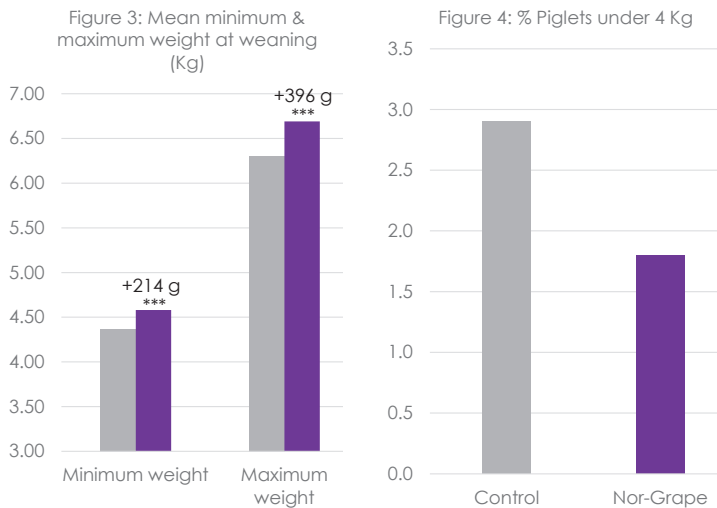


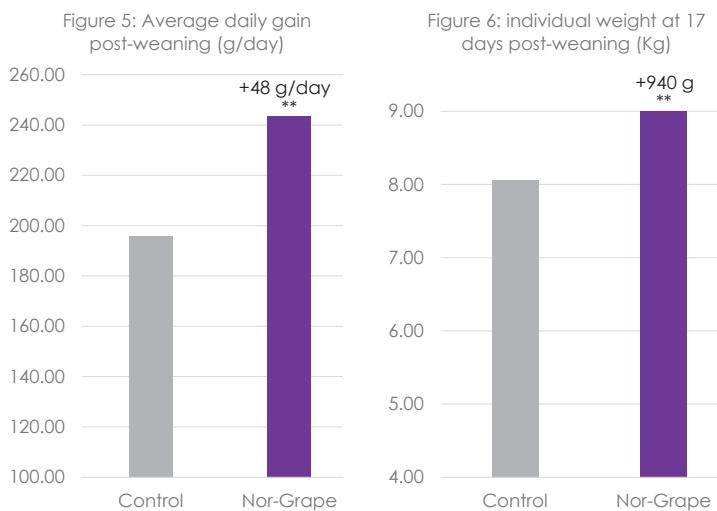
Figure 2: Mean litter wean weight (kg)



Feeding Nor-Grape<sup>®</sup> resulted in significantly ( $P < 0.001$ ) heavier piglets at weaning for both the lowest and highest end weight, compared to the control (Figure 3). There was also a reduced number of runt piglets for sows fed Nor-Grape<sup>®</sup> (Figure 4). Average minimum and maximum weights at farrowing were not different between the two treatments (Data not shown).

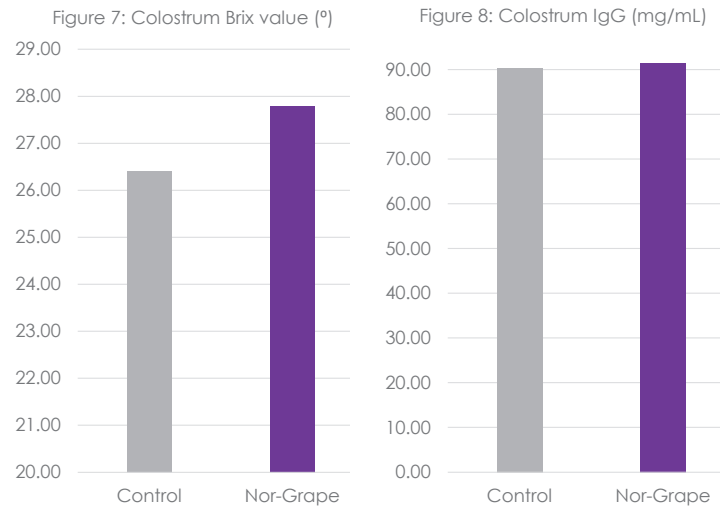


Piglets had significantly ( $P < 0.01$ ) higher average daily gain and individual weight 17 days post-weaning (Figures 5 and 6).

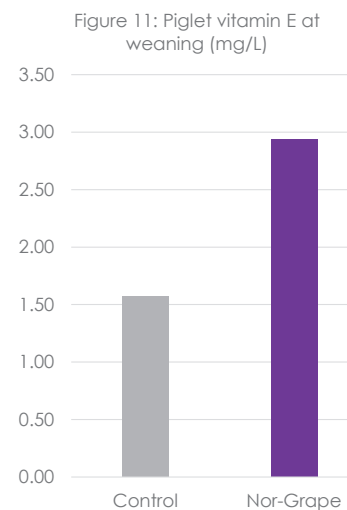
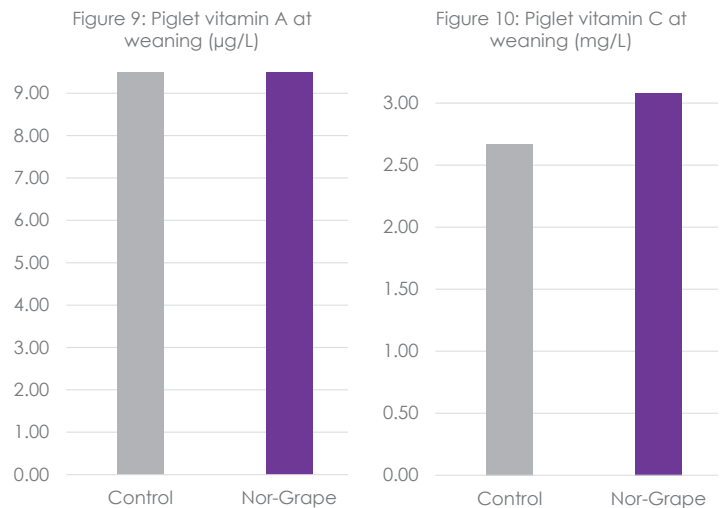


There were no differences between sows fed Nor-Grape<sup>®</sup> and control sows in feed intake or feed intake per litter weaned weight, or backfat loss (data not shown). The data suggest that feeding Nor-Grape<sup>®</sup> to sows resulted in significant piglet growth without the use of additional feed or sacrificing body condition.

Both sow groups had excellent colostrum quality, with colostrum from sows fed Nor-Grape<sup>®</sup> having a significantly higher °Brix (Figure 7: +1.4 points,  $P < 0.05$ ) regardless of parity, and 1.2% numerically higher IgG level (Figure 8).

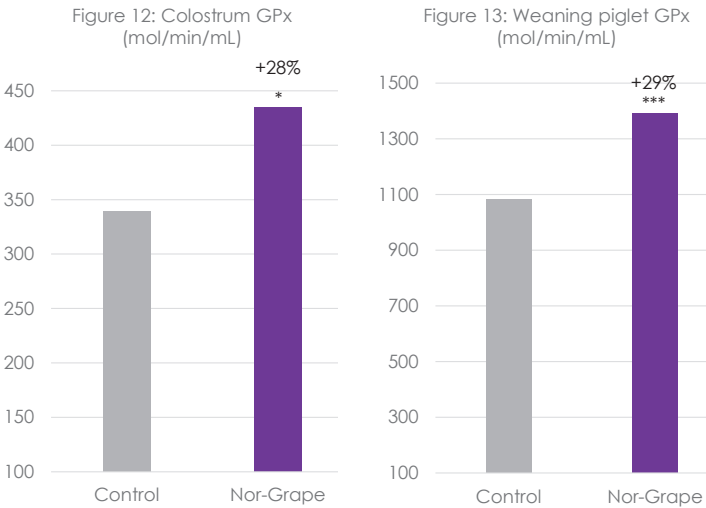


Nor-Grape<sup>®</sup> supplementation led to an increase in vitamin antioxidant defenses in weaned piglets, as evidenced by increases in blood level of vitamins A (Figure 9), C (Figure 10: +15%) and E (Figure 11: +87% ;  $P = 0.10$ ).



There was a significantly positive correlation ( $P < 0.05$ ) between piglet's blood vitamin A, C and E levels and piglets weight at weaning. The data suggest that the high vitamin defenses at weaning played a significant role in the achieved higher piglet weights at weaning.

Additionally, colostrum (Figure 12) and piglet blood (Figure 13) glutathione peroxidase (GPx) levels from the Nor-Grape® group, representing endogenous antioxidant defenses, were 28% ( $P < 0.05$ ) and 29% ( $P < 0.001$ ) higher, respectively.



In conclusion, supplementation of sow diets with 50 ppm Nor-Grape® from 6 day prior to 18 days post parturition improved colostrum quality in lactating sows, optimized sow's resource utilization and lactation performance, enhanced piglet defenses and boosted growth performance, and created beneficial conditions for post-weaning oxidative stress management.

**References**

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2. A. Buchet, C. Belloc, M. Leblanc-Maridor and E. Merlot, 2017. Effects of age and weaning conditions on blood indicators of oxidative status in pigs. *PLoS ONE* 12(5):e0178487. [Hpps://doi.org/10.1371/journal.pone.0178487](https://doi.org/10.1371/journal.pone.0178487).
3. P. K. Theil, C. Lauridsen and H. Quesnel, 2014. Neonatal piglet survival: impact of sow nutrition around parturition on fetal glycogen deposition and production and composition of colostrum and transient milk. *Animal*, Vol 8 (Issue 7), pp.1021-1030.

**Note: If you need more details about the study, please contact Dr. Miloud Araba directly at [maraba@qtitech.com](mailto:maraba@qtitech.com).**



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**Intestinal Integrity®**

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