

L-Carnitine supplementation during gestation increases birthweight of piglets

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Background and Objectives

Over the last decades, the reproductive performance of sows has improved considerably based upon advanced genetics, feed formulations and management techniques. The substantial increase of total born piglets is a potential productive advantage. Nevertheless, it usually goes hand in hand with a greater birthweight variability and more small and non-viable piglets (0.8-1.1 kg and ≤ 0.8 kg bodyweight respectively). The increase in prolificacy has not been accompanied by a proportional increase in the amount of colostrum, putting piglets with a lower birthweight at a disadvantage. A good liver function is crucial for optimal production as various metabolic processes take place. Carnitine and choline chloride are essential for fat metabolism and transport of fatty acids into the mitochondria. They stimulate the liver function and optimize energy production.^{1,2}

These compounds are derived from dietary sources and endogenous biosynthesis. However, endogenous synthesis is insufficient to meet the metabolic requirement during gestation. L-carnitine supplementation to sows stimulates the glucose metabolism in the foetuses, providing extra energy for foetal development. The impact of the supplementation of carnitine on the birthweight was investigated in a sow herd with high prolificacy (1200 Danbred LY sows, average 18.7 live born and 2.2 stillborn piglets/ litter).

Materials and Methods

The average birthweight of live born piglets was investigated in a comparative trial with 2 sow groups. One group, comprising 40 sows (17.5% gilts), was supplemented with a liquid formulation of L-carnitine, choline, plant extracts and sorbitol (Carnitol-L®). The product was added to a standard liquid feed for sows for the last 4 weeks of gestation. The daily dosage was 120 mg L-Carnitine, corresponding to 4 ml product.

The control group was not supplemented and comprised 41 sows (15% gilts). 734 live born piglets from sows of the supplemented group and 761 live born piglets of the control group were weighed at birth by individual weighing in the morning.

Results

The average birthweight of the live born piglets in the control and the supplemented group was 1259 and 1292g respectively. L-carnitine supplementation for the last 4 weeks of gestation resulted in a 2.6% increase in birthweight.

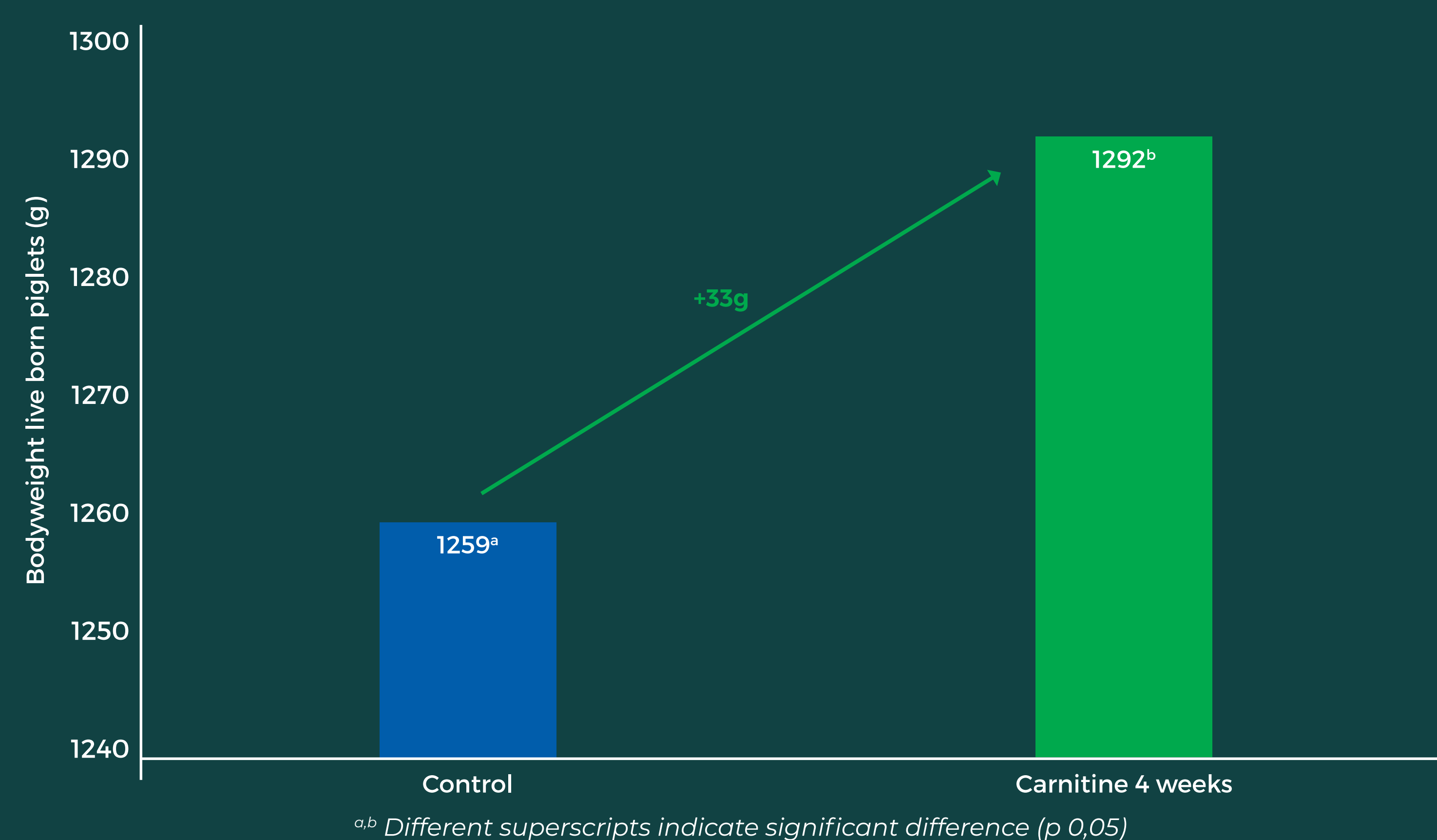


Figure 1. Average bodyweight of the live born piglets in the 2 groups

Conclusion

Daily supplementation of 4 ml Carnitol-L® (120 mg L-Carnitine) to sows for the last 4 weeks of gestation increased the live born piglet birthweight significantly with 33g.

References

- ¹ Eder 2009. British J of Nutrition, 102, 645-654
- ² Zhang S et al. 2018. Archives of animal nutrition May 2018

