RESEARCH ABSTRACT

ANIMAL SCIENCE

Title: Effect of glucosamine supplementation on litter size in a commercial setting - **NPB #14-238**

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Date Submitted: October 15, 2015

Scientific Abstract:
Litter size is influenced by ovulation rate, fertilization rate, embryo mortality and uterine capacity. Of these, the most limiting factor is uterine capacity, because increased ovulation rate results in increased number of embryos on day 30 of gestation, but this advantage is lost during later gestation. Uterine capacity is heavily influenced by placental function, making factors that influence placental development of interest in improving uterine capacity and litter size. Previous results indicated that glucosamine supplementation increased litter size in unilaterally hysterectomized-ovariectomized (UHO) gilts and increased the depths of the folds of the placental trophoblast-endometrial epithelial cell bilayer that represents the interface between the gilt and fetus. The objective of the current study was to determine whether glucosamine supplementation would increase litter size in intact sows under commercial conditions. Sows (parity 2-8) at a commercial farm in Diller NE were mated according to standard procedures and were then treated with either 10 grams per day of glucosamine (128 sows) or glucose (127 sows) as a top dress on their feed. Treatments began on day 85 of gestation and continued until farrowing. Total born, born alive, stillborn and mummies in the litter were recorded, and each piglet was weighed at birth and at weaning. Total born and born alive piglets after glucosamine supplementation were 15.6 ± 0.4 and 14.0 ± 0.3, respectively, compared to 15.2 ± 0.4 and 13.8 ± 0.3, respectively, for glucose supplementation, and did not differ between treatments. Piglet birth and weaning weights were 1.37 ± 0.02 and 5.48 ± 0.06 kg, respectively, for glucosamine supplemented sows compared to 1.35 ± 0.02 and 5.43 ± 0.06 kg, respectively, for glucose supplemented sows. As with litter size results, these means did not differ between treatments. In a separate analysis, the overall incidence of stillbirth and preweaning mortality did not differ between glucosamine treated sows (9.9 ± 0.9 and 16.7 ± 1.1%, respectively) compared to glucose treated sows (8.4 ± 0.8 and 16.0 ± 1.1%, respectively). However, there was a significant interaction between treatment and parity with regard to both the number of stillborn piglets and stillbirth rate. This interaction was due to increased stillbirth in glucosamine treated seventh and eighth parity sows compared to glucose treated seventh and eighth parity sows. Thus, results indicate that despite our previous results in UHO gilts, glucosamine treatment of sows during late gestation did not affect litter size, birth weights, or preweaning survival, but did increase stillbirth rate in late (7 and 8) parity sows.