

Enhancement of Litter Size in Commercial Swine

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SUMMARY

Prenatal mortality is a significant concern in commercial swine. Mechanisms for this loss are not clearly defined but previous research linked poor blood supply to the developing fetuses as a leading cause. We conducted a trial utilizing biologic derived from bacteria and assessed its effects on overall litter size and postnatal health in swine.

INTRODUCTION

Prenatal mortality is a prime concern in the North American Pork Industry; 20-30% of conceptuses are lost between gestation days (gd) 15-30 and another 10-15% between gd 50-70. For > 10 years, efforts to improve litter size in commercial meat pigs by identification and selective breeding for genes responsible for uterine capacity and placental efficiency have had limited success. Studies of improved diet balance or vitamin supplements also failed. Hence, the need remains to understand critical steps controlling porcine conceptus-endometrial interactions important for fetal survival.

Previous work supported by Ontario Pork showed that endometrial lymphocytes regulate and contribute to the new blood vessel development at sites containing healthy fetuses but abruptly stop blood vessel promoting growth factor production and elevate inflammation supporting cytokines at the sites containing growth arrested fetuses. This identified endometrial lymphocytes and their products as suitable targets for therapeutic or selective breeding strategies to enhance production. Immunomodulatory molecules compatible with human food production are commercially

available. These could be safely used to mildly stimulate production of uterine cytokines and blood vessel promoting factors, which may elevate fetal survival and increased litter size. We used one such product, a biologic prepared from bacteria by a Canadian Biopharmaceutical company; Bioniche Life Sciences, Inc. We recently conducted a trial to determine if this biologic could promote litter size in commercial swine by administering at the time of insemination. The preliminary results are very promising and are discussed below.



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RESULTS AND DISCUSSION

A biologic from Bioniche Life Sciences, Inc was administered in sows at the time of insemination and its effects were evaluated on litter size and overall postnatal growth. Results from that trial indicated that litter size was increased ~2 piglets in treated group compared with control. This increase in litter size at birth did not negatively affect piglet weight or overall health. We were able to successfully wean larger litters from treated sows compared with control, without affecting the piglet weight and health parameters. Further, we demonstrated that piglets born to treated sows took similar days to attain market weight compared with piglets born to control sows. There was no difference in the meat parameter between pigs born to treated sows versus control.

CONCLUSION

These results clearly demonstrate that the biologic used in the present study has significant potential to stimulate litter size in commercial swine. Due to intellectual property matters no details on the biologic or specifics of the treatment can be published at this time.

ACKNOWLEDGEMENTS

This research work was supported by Ontario Pork, Bioniche Life Sciences, Inc, Natural Sciences and Engineering Research Council and Ontario Ministry of Agriculture and Food. We would like to thank staff at the Arkell Swine Research Station, University of Guelph for animal care and management.

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