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Induced Ovulation of Premature Follicles in Early-weaned Sows to Optimize Time of Estrus

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Introduction

In an early weaning system, sows have the potential to produce more litters per year, than in a conventional system. However, the physiology of a sow may diminish this potential. Suckling stimuli from piglets inhibits the release of hormones that stimulate ovarian activity. Sows normally return to estrus within few days after their litters were removed regardless of the length of lactation. Uterine regeneration is complete by days 14-21 postpartum. There is no method to shorten the healing process of the uterus to less than 2 weeks. Re-breeding of the sows should not be attempted before days 21 postpartum. Incomplete uterine involution may be a major cause of embryonic mortality.

Early separation of litters from the sows may be essential for some herds that need to prevent vertical disease transmission. These early-weaned sows should be re-bred within the shortest time permitted, in order to achieve optimum productivity. Skipping the first heat and waiting for the next cycle to rebreed these sows will increase non-productive sow days. It would be beneficial to use hormone treatments to postpone (only few more days) the first estrus in weaned sows that have short lactation lengths.

The purpose of this study was to determine whether luteal progesterone from the induced CL is comparable to Regumate® in synchronization of estrus in early weaned-sows.

Twenty-four crossbred (Yorkshire-Landrace X Duroc) post-farrowing sows, parity one to six, were randomly assigned into 4 treatment groups. Group3 injected I/M 1,000 iu of hCG (Follutein ®, SOLVAY, Mendota Heights, MN, USA) at 12 hours after farrowing, and D16 injected with 250 μg of PGF2α (Estrumate ®, Miles Inc., Shawnee, Mission, Kansas, USA). Group4 fed 7 ml (15.4 mg) of progesterone (Regumate ®, HOECHST-ROUSSEL, Somerville, NJ, USA) daily from D10 to D16 (D1= at farrowing day).

Discussion and conclusion

Estrus in the early-weaned sows was successfully synchronized. Ovarian activity can be suppressed by piglet suckling during lactation as well as by progesterone from either administrated Regumate® or induced CLs. The sows either weaned at 10 or 16 days have similar weaning-to-estrus intervals. Progesterone in the plasma reaches peak values 10 days after ovulation (Kunavongkrit et al, 1983). Detection of progesterone in the plasma at D10 indicates injection of hCG at the day of farrowing (D1) induces ovulation. The induced CLs will then regress spontaneously 16 days later (Britt, 1996), or the CLs could be regressed by injecting the sow with prostaglandin (PGF2α) on day 12-16 after the induction of ovulation. Towards extending of luteal phase, effect of hCG and PGF2α was comparable to Regumate®. Use of hCG and PGF2α injection can be an alternative method for estrus synchronization.

References

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Table 1. Results

Group	Avg. No. of piglets	Lactation length (days)	Wean-to-estrus interval (days)	Farrow-to-estrus interval (days)
1.Contl1	7.6	16	5.5[a]	21.5[c] (21-23)*
2.Contl2	8.3	10	6.0[a]	16.0[d] (15-18)
3.hCG+ PGF2α	12.0	10	12.0[b]	22.0[c] (21-24)
4.Regumate	9.7	10	11.2[b]	21.2[c] (20-23)
Mean	9.4	-	8.7	20.4
Pr>F	0.10	-	0.0001	0.0001

a and b, c and d are significantly different; * The numbers in parenthesis are ranges