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Utilization of a GnRH analog (Lecirelina) for induction and synchronization of ovulation in sows

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Introduction

Time of ovulation has been extensively investigated because it offers practical advantages in livestock management and for the development of reproductive technologies[1]. The objective of the present study was to determine the effect of GnRH analog on synchronizing and advancing the time of ovulation in weaned sows.

Materials and Methods

A total of 110 sows (C22 and C23) of parity 2-6 were analyzed. Oestrus detection, in post-weaning sows, was performed every 8 hours (01:00h am, 09:00h am, 05:00h pm) in the presence of a mature boar, using the standing reflex in response to back pressure. Wean to estrus interval (WEI) and duration of estrus (DE) was determined. WEI was calculated in hours and corresponded to the interval between weaning and the onset of estrus, less 4 hours. DE (h) corresponded to the period between the onset of estrus less 4h and the moment where the standing reflex was no longer observed (a period of end of estrus, less 4h). Sows were assigned in 2 standardized groups according to parity, WEI and body condition score (BCS). Sows in group A (n=55) were treated with 25 µg (1 mL) of lecirelina (Gestran Plus®), i.m. Control group (B, n=55 sows) received an i.m. saline (1 mL) injection. Lecirelina and saline were injected on the onset of estrus (first standing reflex). Ovulation time (OT) was determined with transcutaneous real-time ultrasonograhy using 5MHz transducer. Ultrasonography was performed every 8 hours (02:00 am, 10:00 am and 06:00 pm). Ovulation was complete when large follicles (pre-ovulatory) were no longer detectable. Variables such as parity, BCS, duration of lactation (DL), WEI, DE and ovulation time were verified using variance analysis by GLM procedure in SAS and averages were compared by t-test. Sows with different intervals from estrus onset to ovulation were compared by chi square.

Results

Table 1 shows no differences between groups for Parity, BCS, DL and WEI. DE was different between groups (Table1), although it was not affected in other study using synchronized ovulation with porcine luteinizing hormone[1]. However, DE was affected when ovulation was anticipated with an intravaginal GnRH-agonist[2]. Ovulation occurred earlier in the group treated with GnRH analog (Table 1). A large proportion of sows ovulating up to 40 hours was found in the GnRH treated group. A trend was also seen in a large proportion of sows up to 48 hours in the same group (Table 2).

Table 1-Least square means for sows characteristics, saline (control) and GnRH agonist (lecirelina) treatments

	Control (sd)	Lecirelina (sd)
n	55	55
Parity	4,3 (± 1,5)	4,3 (± 1,5)
BCS	2,9 (± 0,3)	3,0 (± 0,4)
DL (days)	22,1 (± 1,7)	22,6 (± 2,0)
WEI (h)	90,4 9(± 12,0)	90,3 (± 12,0)
DE (h)	66,3 (± 9,7)a	61,3 (± 9,5)b
OT (h)	44,3 (± 8,9)a	39,9 (± 9,1)b

a, b within line p<0,05.

Table 2-Cumulative percentage of ovulation time in different intervals after estrus onset

	Control	Lecirelina	p
Up to 32h	16,1 %	25,4 %	0,22
Up to 40h	48,2 %	70,9 %	0,01
Up to 48h	82,4 %	92,7 %	0,09

Controlling ovulation time would result in optimization of semen use as well as minimizing the number of inseminations per sow by being able to use a fixed time insemination strategy.

References

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