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นิพนธ์ต้นฉบับ

Altrenogest for control of estrus in gilts*

การเหนี่ยวนำให้สุกรสาวเป็นสัดด้วยอัลตรีโนเจลส์*

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เพื่อกระตุ้นการผสมเทียมภายในฟาร์ม นำอัลตรีโนเจลส์มาเหนี่ยวนำให้สุกรสาวเป็นสัดพร้อมกัน สุ่มเลือกสุกรสาวพันธุ์ผสม (แลนด์เรซ x ลาร์จไวท์) 64 ตัว เลี้ยงอยู่ที่ฟาร์มเอกชน จังหวัดนครปฐม สุกรทดลองทุกตัวผ่านการเป็นสัดมาแล้ว 1 ครั้ง มีอายุระหว่าง 5.9 ถึง 8.5 เดือน แบ่งสุกรเหล่านี้ออกเป็น 2 กลุ่ม กลุ่มที่ได้รับยาอัลตรีโนเจลส์ขนาด 20 มิลลิกรัม (5 มล) ผสมอาหารเช้าให้สุกรแต่ละตัวในกลุ่มได้รับยากินทุกวัน ติดต่อกัน 18 วัน หลังหยุดยาสังเกตการเป็นสัดวันละ 2 ครั้ง เช้า-เย็น เช่นเดียวกับกลุ่มเปรียบเทียบ ซึ่งเริ่มสังเกตการเป็นสัดตั้งแต่เริ่มต้นการทดลอง เมื่อพบการเป็นสัดให้ทำการผสมเทียมด้วยน้ำเชื้อสดเจือจาง 1:1 ถึง 1:3 ครั้งแรกประมาณ 12 ชม. หลังตรวจพบการเป็นสัด ผสมซ้ำอีกประมาณ 12 ชม.ถัดมา 88% (31/35) ของสุกรที่ได้รับยาเป็นสัดภายใน 3 - 6 วันหลังหยุดยา ในขณะที่สุกรกลุ่มเปรียบเทียบเป็นสัดกระจัดกระจาย ในช่วงระยะเวลา 39 วันที่ทดลอง สุกรกลุ่มที่ได้รับตัวยาทุกตัวเป็นสัด ส่วนในกลุ่มเปรียบเทียบ 93% (27/29) เป็นสัด สมรรถภาพของสุกรในกลุ่มที่ได้รับยาและกลุ่มเปรียบเทียบในแง่ของอัตราการคลอด, กลับสัดและคัดทิ้ง 40% เทียบกับ 27.6%, 48.6% เทียบกับ 44.8% และ 11.4% เทียบกับ 27.6% ตามลำดับ ส่วนขนาดของครอกแรกเกิด, คลอกมีชีวิตและขนาดของครอกขณะหย่านมเป็น 7.4 ± 1.5 เทียบกับ 8.4 ± 2.8, 7.4 ± 1.5 เทียบกับ 8.1 ± 2.5 และ 7.4 ± 1.5 เทียบกับ 7.8 ± 2.6 ตามลำดับ ทุกลักษณะที่ศึกษาของทั้งสองกลุ่มไม่แตกต่างกัน

ผลการศึกษาครั้งนี้ ชี้ให้เห็นถึงความสามารถของอัลตรีโนเจลส์ ในการเหนี่ยวนำการเป็นสัดในสุกรที่ผ่านการเป็นสัดมาแล้วหนึ่งครั้งได้ถึง 97% ภายในเวลา 10 วันหลังหยุดการให้ยา สภาพเช่นนี้ย่อมช่วยให้การใช้น้ำเชื้อจากพ่อพันธุ์ที่ดีเป็นไปได้อย่างคุ้มค่า

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ABSTRACT :

To facilitate artificial insemination (AI) in farm, Altrenogest was used to synchronize estrus. Sixty four crossbred gilts (Landrace × Large White) belonged to a private piggery at Nakhon Pathom were used. They experienced first estrus (aged between 5.9 - 8.5 mo) and were randomly allotted into 2 groups, Altrenogest treated (N = 35) and non-medicated control (n = 29). Altrenogest at the level of 20 mg was individually given with morning feed to the treated gilts for 18 consecutive days. After cessation of the treatment, detection of estrus was carried out twice daily, morning and evening while in the controls they were observed for estrus since the beginning of the trial. When animals were in heat they were first inseminated 12 h later with diluted (1:1 to 1:3) fresh semen and re-inseminated 12 h after the first insemination. Eighty eight percent (31/35) of treated gilts were in heat within 3-6 days after cessation of the treatment. While the control animals exhibited signs of heat distributively over a period of 39 days. All of the treated and 93% (27/29) of the control animals were inseminated. Performance of the treated and control gilts in terms of farrowing rate, remated and culling were 40% VS 27.6%, 48.6% VS 44.8% and 11.4% VS 27.6% respectively. Litter size at birth, born alive and litter size at weaning were 7.4 ± 1.5 VS 8.4 ± 2.8, 7.4 ± 1.5 VS 8.1 ± 2.5 and 7.4 ± 1.5 VS 7.8 ± 2.6 respectively. All traits studied were not different significantly. These findings demonstrated that, Altrenogest induced estrus in gilts which had experienced one estrus (97%) within 10 days. This phenomenon renders more advantage of using superior genetic boars both in AI and planned mating.

INTRODUCTION

Our recent report on using Altrenogest for estrous synchronization in gilts (Chantaraprateep *et al.*, 1986) seemed to be promissed but criteria of inclusion was not appropriate. Some verifications i.e. percentage of treated animals which come in heat after cessation of the treatment and peak period which majority of animals come in heat as well as performance of the treated animals have to be carried out. In the mean time artificial insemination (AI) will be introduced into the experimental piggery.

MATERIALS AND METHOD

Sixty four crossbred gilts (Landrace × Large White) which experienced first estrus were randomly allotted into 2 groups, Altrenogest treated (N = 35) and non-medicated control (N = 29). They belonged to a private commercial piggery at Nakhon Pathom province. Their range of age at the first estrus was 5.9 - 8.5 mo and average days in heat prior to the trial was 9.3 ± 5.6 with the range of 1-24 days. Each of them was fed 1.0 kg of a complete feed twice daily throughout the trial.

Altrenogest (Regumate® , Roussel-Uclaf, France) contains 20 mg in 5 ml oil solution was used.

Gilts exhibited first estrus were randomly divided into 2 groups as designed. In the treated group, individual gilts was given Altrenogest on top of the morning feed at the level of 20 mg/gilt/day (5 ml) for 18 consecutive days. Whereas in the control group gilts were fed only non-medicated feed.

Estrus was detected twice daily by observation of signs together with back pressure test. In the treated group it was carried out for 25 days after cessation of Altrenogest while in the controls it was from the beginning of the Altrenogest treatment up to 43 days. When animals were in heat, they were inseminated twice, 12 h apart with fresh semen diluted 1:1 to 1:3, the first insemination was performed 12 h after standing heat.

The investigation was carried out during June to November 1985. Statistical analysis was done by using Student's t-test and proportion test (Snedecor and Cochran, 1980).

RESULTS

All the experimental animals (64 gilts) experienced first estrus prior to the beginning of the trial as shown in figure 1. In the Altrenogest treated group, 97.1% (34/35) of the gilts exhibited signs of heat and were inseminated within 10 days after cessation of the treatment or 88.6% (31/35) within 3-6 days and only 1 gilt that exhibited signs of estrus within 25 days. While in the control group animals exhibited signs of heat and were inseminated distributively from day 5 after the beginning of the trial up to day 21 after cessation of the Altrenogest. Majority of the control gilts exhibited second estrus within 20.8 ± 8.5 days and 7% (2/29) did not exhibit signs of heat within 43 days.

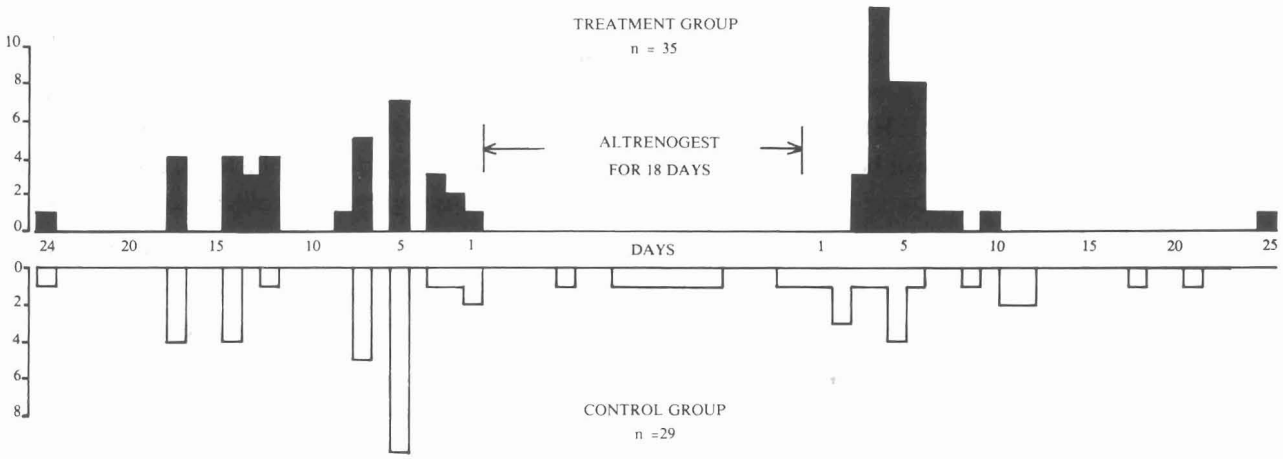


FIGURE 1 NUMBER OF GILTS IN ESTRUS AND INSEMINATED BOTH IN ALTRENOGEST TREATED (n = 35) FOR 18 CONSECUTIVE DAYS AND NON-MEDICATED CONTROL (n = 29) GROUPS.

Performance of gilts through the trial is shown in table 1. In the Altrenogest treated animals, out of 35 only 14 gilts (40%) farrowed, remated and culling were 48.6% (17/35) and 11.4% (4/35) respectively. While in the controls, they were found 27.6% (8/29), 44.8% (13/29) and 27.6% (8/29) respectively. The 3 traits studied of both groups were not significantly different ($P > 0.05$). At farrowing, litter size, born alive and number of piglets weaned were similar for both groups. For treated and control animals they were (mean ± S.D.) 7.4 ± 1.5 VS 8.4 ± 2.8, 7.4 ± 1.5 VS 8.1 ± 2.5 and 7.4 ± 1.5 VS 7.8 ± 2.6 respectively. These traits were also not significantly different ($p > 0.05$). All gilts which failed to exhibit estrus were culled and definitive diagnosis could not be made due to unavailability of the animals.

Table 1 *Performance of gilts treated with Altrenogest and non medicated control through the trial*

Traits	Treatment				p-value
	Altrenogest (n = 35)		Control (n = 29)		
	No.	%	No.	%	
Farrowing	14	40.0	5	27.6	NS
Remated	17	48.6	13	44.8	NS
Culling	4	11.4	8	27.6	NS
* Litter size at birth		7.4 ± 1.5 (5 - 10)		8.4 ± 2.8 (3 - 12)	NS
* Piglets born alive per litter		7.4 ± 1.5 (5 - 10)		8.1 ± 2.5 (3 - 10)	NS
* No. wean per litter		7.4 ± 1.5 (5 - 10)		7.8 ± 2.6 (3 - 10)	NS

*** Value is expressed in terms of mean ± S.D. and range in parenthesis.**

DISCUSSION

Treated gilts exhibited estrus 88.6% (31/35) over a period of 72 h i.e. between days 3 to 6 after cessation of Altrenogest which was lower than the report (98%) of Martinat Botte *et al.*, (1977), 80.7% (n = 314 gilts) of the heats were synchronized within a 2 day period on the 5th and 6th days (Polge, 1982). In this study it was found to be 97.1% (34/35) if accounted within 10 days after cessation of the treatment this finding was better than the previous report (92.4%) by Chantaraprateep *et al.*, (1986) but lower than the report (98.5%, n = 586) which gilts came into estrus within 9 days after the end of treatment. This is the benefit of this treatment, as the distribution of the heat in gilts is more dispersed than sows 52.4% VS 84.7% in one week (Sibelle and Dedina, 1986).

Only one gilt exhibited estrus late up to 25th day after the treatment, this could be explained by either missing of heat detection or it was silent heat. The progesterone like product Altrenogest inhibits the release of gonadotropins (FSH and LH) cyclic secretion by exerting a negative feedback on pituitary gland. At the end of the treatment there will be no functional corpus luteum (CL) and growing follicles. Cessation of the treatment will induce a discharge of gonadotropins which in turn causes growth of follicles and ovulation.

These findings enhance AI and maximizing boars utilization in the farm as treated animals came in heat at a short period of time. Furthermore, embryo transfer (E.T.) programme will be conducted more successfully as synchronization of estrus between donor and recipient is efficiently done (Delande, 1983).

In the non-medicated control gilts, each individual exhibited signs of estrus distributively starting from days 5 to 39 from the beginning of the trial. Grouping of estrus is not possible, consequently AI or maximizing of utilization of the boar is difficult to achieve.

Only 40% and 27.6% in the treated and control groups respectively farrowed which was similar to our previous report (Chantaraprateep *et al.*, 1986) and those of Canadell *et al.* (1986). Remated was found very high in both groups around 49% to 45% in the treated and control respectively. These results were higher than our previous findings, around 25-30%, (Chantaraprateep *et al.*, 1986). So far report on this trait has not yet well documented in Thai tropical conditions. Furthermore, culling rate were 11% to 28% in the treated and control groups respectively which was similar to our previous report (Chantaraprateep *et al.*,1986). It's always assume that culling rate in gilt is around 10-15%. Again in this study we could not achieve definitive diagnosis of the culling gilts due to commercial system of the farm. Only reproductive failure which fail to conceive was diagnosed tentatively for all culling gilts.

Mean litter size at birth, piglets born alive per litter were around 7.4-8.4 and 7.4-8.1 respectively. Again they are similar to our previous study (Chantaraprateep *et al.*, 1986), but litter size at weaning in this study was about 10% higher than our previous report (7.4 VS 6.4) in the treated group, however, in the control group they were similar (7.8 VS 7.3)

The findings in this study indicate benefit of using Altrenogest for estrous synchronization and AI. As introduction of new genetic material into a closed herd and increased rate of multiplication of superior genetic boars in farm will be accelerated. In addition, embryo transplantation will be more conveniently to carry out by using aforesaid technique.

Further investigation of using Altrenogest for estrous synchronization of sows will be interesting as shown by Morrow and Leman (1986) in sows after weaning their first litter.

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