Reproductive Performance of Primiparous-Sows and Multiparous-Sows Treated with P.G.600

Valeriu Caraba, Nicolae Pacala, Ioan Bencsik, Alexandra Ivan

Banat's University of Agricultural Sciences and Veterinary Medicine from Timişoara, Faculty of Animal Science and Biotechnologies, Calea Aradului, 119, Timişoara, Romania

Abstract
Synchronous induction of estrus for early breeding of gilts would have numerous practical and research applications. Gilts and sows were treated with a combination of receive either a combination of 400 IU of pregnant mare's serum gonadotropin with 200 IU of hCG (PG 600®). Experiments were performed on 17 primiparous-sows and 15 multiparous-sows, both belonging to the great white breed. Following treatment with PG 600, 86.66% primiparous-sows and 64.7% multiparous-sows entered in heat and they were artificially inseminated. Proportion of females diagnosed pregnant at ultrasound performed at 56 days after artificial insemination was 81.8% at primiparous-sows and 76.92% at multiparous-sows. Consequently, the efficacy of P.G. 600 is different in the two categories of female.

Keywords: Estrus Synchronization, Primiparous and Multiparous-Sows, PG 600

1. Introduction

Control of the porcine estrous cycle has been a goal of intensive scientific investigation for over 40 yr. Despite these efforts, swine producers remain much more limited with regard to availability of methods to alter estrous cycles and time of ovulation than their counterparts in the cattle industry [1].
However, effective managerial and pharmacological methods exist to manipulate the estrous cycle of swine in specific reproductive categories. Treatment of anestrous sows and gilts with this compound led to a standing estrus response in 70 to 78% of treated animals and pregnancy rates from 58 to 80% of bred animals [2].
This treatment would be of considerable economic value to commercial swine operations as a means of controlling the onset of puberty and obtaining a synchronized first breeding of young gilts [3].

*Corresponding author: Valeriu Carabă
Tel.0256277100, caraba_i@animalsci-tm.ro

The aim of this study was to evaluate the effects of treatment with P.G.*600*®, a commercial gonadotropin, on subsequent rebreeding and farrowing performance of commercial sows in anoestrus.

2. Materials and methods

The experiment was conducted on 17 primiparous –sows and 15 multiparous-sows of Large White, which we have given 5 ml PG 600.
P.G. 600 is a combination of serum gonadotropin (PMSG) and chorionic gonadotropin (hCG). P.G. 600 has the form of a vial containing a white crystalline powder, lyophilized accompanied by a vial with diluent for reconstitution. Each dose contains 400U.I. serum gonadotropin (PMSG) and 200U.I. chorionic gonadotropin (CG). Volume of the solvent is 5ml/dose.
Detection was done by back pressure test (RIO). The detection was made twice a day, morning and evening, two inseminations per cycle of heat. The

first insemination was performed 24 hours after estrus detection with recurrence at 36 hours.

3. Results and discussion

Table1 and Figure 1 show the results on the heat rates in primiparous-sows and multiparous-sows in anoestrus to 11 days after weaning, which heats induction was achieved by administering PG 600.

In the first two days after administration of PG 600 the primiparous-sows did not show any heat, while on days 3, 4 and 5, 11 primiparous-sows (64%) showed heat.

On the third day after P.G.600 administration 3 (17.64%) primiparous-sows showed heat, on day four 7 primiparous-sows manifested heat (41.17%), and on the fifth day only a single primi-sows manifested heat.

Hence from 17 primiparous-sows that received the treatment for estrus induction, most of primiparous-sows manifested heat on the fourth day.

In the first two days after administration of PG 600 multiparous-sows did not manifested any heat, while on days 3, 4, 5 and 6 manifested heat 13 multiparous-sows (86.7%).

On the third day after P.G. 600 2 multiparous-sows manifested heat (13.33%), on day four 8 multiparous-sows manifested heat (53.33%), the fifth day two multiparous-sows manifested estrus (13.33%), and the sixth day only one multiparous-sow (6.67%) manifested estrus.

Hence from 15 multiparous-sows which received the treatment for estrus induction, most of the females showed heat on the fourth day.

Our results are similar to those obtained by Estienne (2008) who get a proportion of 57.5% primiparous-sows, multiparous-sows 97% respectively, which manifested heat following treatment with P.G. 600.

In Table 2 and Figure 2 we plotted the main indices of reproduction in primiparous-sows and multiparous-sows in wich the heats were induced by administration of P.G. 600 hormonal product.

The proportion of pregnant primiparous-sows diagnosed at ultrasound performed at 56 days after artificial insemination, was 81.8%, of which only 63.63% have farrowed.

Proportion of females diagnosed pregnant at ultrasound performed at 56 days after artificial insemination was (76.92%). From 15 multiparous-sows treated with PG 600 hormonal preparation, only 13 sows came into estrus and were artificially inseminated and only nine multiparous-sows (69.23%) farrowed.

P.G. 600 is a management tool that can be used to decrease non-productive days (NPDs) and thus enhance reproductive efficiency in the breeding herd. When considering the possible use of P.G. 600, farmers should perform a cost-benefit analysis, comparing the cost of the drug against the beneficial effects of its use on decreasing NPDs and allowing more effective scheduling of breeding and gestation facilities.

Table 1. Manifestation of heats in primiparous-sows and multiparous-sows that heats induction was achieved by administering hormonal preparation PG600

Day	Category			
	Primiparous-sows		Multiparous-sows	
	No.	%	No.	%
1	-	-	-	-
2	-	-	-	-
3	3	17.64	2	13.33
4	7	41.17	8	53.33
5	1	5.88	2	13.33
6	-	-	1	6.67
7	-	-	-	-
8	-	-	-	-
Total treated females	17	100	15	100
Total females in heats	11	64.7	13	86.7

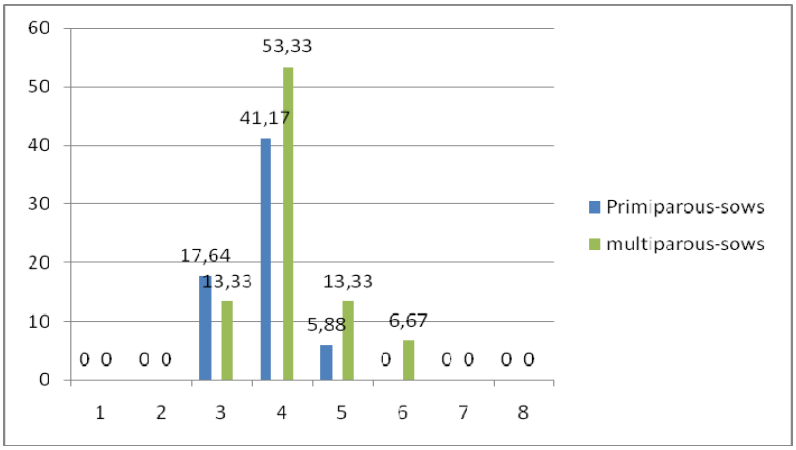

Figure 1. Graphical representation of heats in primiparous-sows and multiparous-sows, after hormonal preparation PG 600 was administrated

Table 2. The main indices of reproduction observed in primiparous-sows and multiparous-sows in wich the heats were induced with P.G. 600

Specification	Category			
	Primiparous-sows		Multiparous-sows	
	No.	%	No.	%
Females treated	17	100	15	100
Females inseminated	11	64.7	13	86.66
Females pregnant at 56 days	9	81.8	10	76.92
Females that aborted after 56 days	2	18.18	1	7.69
Females that farrowed	7	63.63	9	69.23

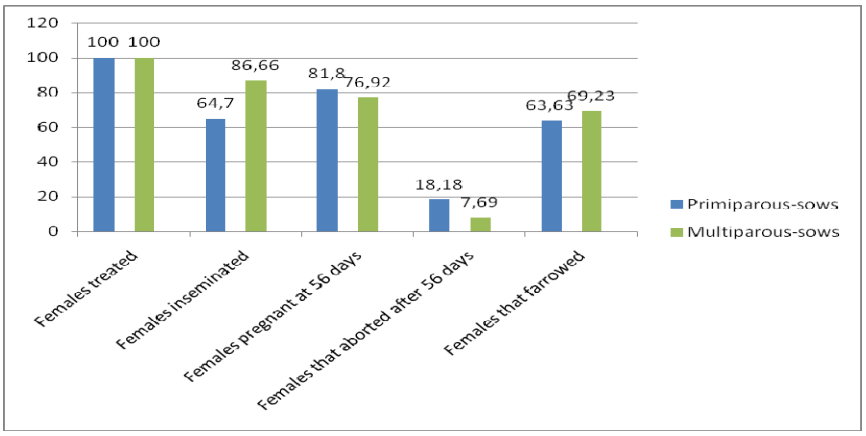

Figure 2. Graphic representation of main indices of reproduction in primiparous-sows and multiparous-sows treated with P.G. 600

4. Conclusions

At primiparous-sows, administration of P.G. 600 determines the group of the estrus on days 3, 4 and 5, when heats were observed in 64.7% of primiparous-sows.

At multiparous-sow, there is a grouped onset of heats on days 3, 4, 5 and 6 after administration of P.G. 600. In this period heats were observed

in 86.7% from the total number of treated multiparous-sows.
The effectiveness of P.G. 600 is different in the two categories of females. In primiparous-sows, the heat rate is 64.7%, while in weaned multiparous-sow is 86.7%, the difference is significant.

References

1. Estill, C. T., Current concepts in estrus synchronization in swine, Proceedings of the American Society of Animal Science, 2000.
2. Horsley, B. R., Estienne, M. J., Harper, A. F., Estienne, C. E., and Knight, J. W., Effects of P.G. 600 on estrus and ovulation in prepubertal gilts treated with Regu-mate, Journal Animal Science, 2001, 79 (Suppl. 1), 24.
3. Estienne, M. J., Uses of P.G. 600 in Swine Breeding Herd Management, Animal Scientist-Swine, Tidewater Agricultural Research and Extension Center - Livestock Update, Virginia Cooperative Extension website, 2008.