Researches Regarding the Estrus Induction to Wean Sows, During the Summer Season, Using the Hormonal Products Maprelin XP10 and P.G. 600

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Abstract
The researches were made with the goal to induce estrus to the wean sows, during the summer season. To the pluriparous sows we administrate 2 ml Maprelin XP 10 at 24 hours after weaning to the experimental group. Control group didn't receive any hormonal product. Primiparous sows were split in two groups: to one group we administrate 0.5 ml Maprelin XP 10 at 24 hours after weaning; to the other group we administrate 5 ml P.G. 600 in the weaning day. Weaning to estrus interval was 5.33±0.21 days for 2 ml Maprelin XP group, 5.16±0.24 days for control group, 6.32±0.39 days for 0.5 ml Maprelin XP and 5.18±0.35 days for P.G. 600 group. Proportion in estrus after weaning was 98.01% for 2 ml Maprelin XP group, 96.28% for control group, 89.56% for 0.5 ml Maprelin XP and 91.22% for P.G. 600 group. Fecundity at 28 days after the A.I. was 91.71% for 2 ml Maprelin XP group, 92.26% for control group, 83.41% for 0.5 ml Maprelin XP and 86.61% for P.G. 600 group. Farrowing rate was 86.00% for 2 ml Maprelin XP group, 85.11% for control group, 76.68% for 0.5 ml Maprelin XP and 78.66% for P.G. 600 group.

Keywords: estrus, Maprelin XP10, P.G. 600, sows

1. Introduction

Modern swine reproduction relies upon the use of precision breeding. Commercial pork production breeding decisions are dictated by the necessity to maintain precise farrowing schedules to optimize pig production. Fertile estrus expression in a defined number of days is critical and relevant to all decisions involved in mating sows and gilts. Swine breeding that results in consistent conception and farrowing of large litters requires proper preparation and planning. Administering gonadotropins at weaning may induce ovulation more predictably [1].
There is a variation in the length of time it takes sows to return to heat after weaning and there is also uncertainty about when ovulation takes place during the period of standing heat.

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Those factors make precise timing of AI more difficult. To overcome the variation and uncertainty producers need to be vigilant in observing for signs of heat and breeding multiple times during estrus [2].

2. Materials and methods

The products used to induce heat were Maprelin XP10 and P.G.600. Maprelin XP10 it's a GnRH analogue with chemical name Gonadorelin. The mode of effect of the estrus stimulating Peforelin differs. Peforelin differs from the mode of effect of conventional GnRH analogues because of its FSH-selectivity. P.G.600 contains a combination of two hormones that have been approved worldwide for use in swine for inducing estrus. Each single dose contains standardized biological activity of PMSG and hCG. Both products,

Maprelin XP10 and P.G. 600 have the property to induce estrus to sows.

The biological material was represented by 1602 wean sows. In this trial we try to induce the estrus to pluriparous and primiparous sows. To the pluriparous sows we administrate 2 ml Maprelin XP 10 at 24 hours after weaning to the experimental group (Map 2). Control group didn't receive any hormonal product (Control). Primiparous sows were split in two groups: to one group we administrate 0.5 ml Maprelin XP 10 at 24 hours after weaning (Map 0.5); to the other group we administrate 5 ml P.G. 600 in the weaning day (P.G.600). After weaning, the sows were housed in common pens until they show estrus. In the day when the sows were in estrus, they were transferred in crates, inseminated and remain until 28 days of gestation when ultrasound exam was performed to establish pregnancy. After this exam, the sows were transferred in open pens gestation until 110 days of pregnancy when were transferred in farrowing crates. After the administration of hormonal products we follow up wean to estrus interval, percent of sows that got in heat, fecundity and farrowing rate.

3. Results and discussion

After the administration of the hormonal products, Maprelin XP10 and P.G. 600 we follow the next reproduction indicators: weaning to estrus interval, proportion of sows that show estrus in the first 7 days after weaning, proportion of sows that show estrus after 7 days from weaning, conception rate and farrowing rate. In table 1 we presented the dynamic of estrus manifestation, after weaning, according to the hormonal treatment that was made.

Table 1. Results regarding the proportion of sows that show estrus after weaning

Specification	Sows/ group	Sows inseminated in the first 7 days after weaning		Sows inseminated after 7 days from weaning		Total sows inseminated/group		Sows that were not inseminated	
	n	n	%	n	%	n	%	n	%
Control	537	474	91.68^{a}	43	8.32^{a}	517	96.28^{a}	20	3.72
MAP 2	554	499	91.90^{a}	44	8.10^{a}	543	98.01^{a}	11	1.99
MAP 0.5	249	192	86.10^{A}	31	13.90^{A}	223	89.56^{A}	26	10.44
PG 600	262	223	93.31^{a}	16	6.69^{a}	239	91.22^{a}	23	8.78
TOTAL	1602	1388	91.20	134	8.80	1522	95.01	80	4.99

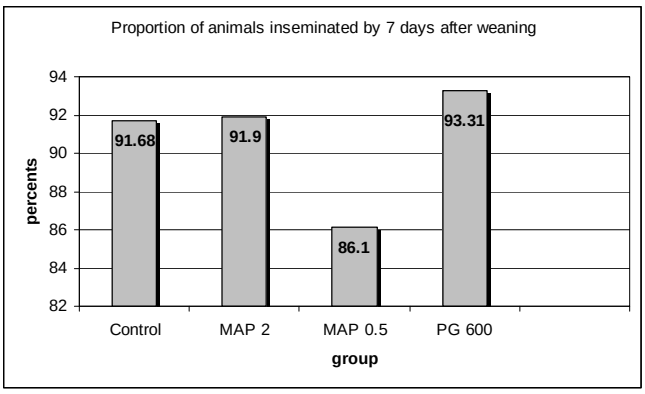

Figure 1. Graphic representation of the proportion of animals that show estrus and were inseminated by 7 days after weaning

From the table we can notice that the proportion of sows that show estrus in the first 7 days from weaning was 91.68% for the control group, 91.90% for MAP 2 group, 86.10% for MAP 0.5 group and 93.31% for P.G.600 group. The differences were statistically significant between

MAP 0.5 group and P.G. 600 group (χ^2 test $p<0.05$) and not significant between the other groups (χ^2 test $p>0.05$).The proportion of sows that show estrus after 7 days from weaning was 8.32% for the control group, 8.10% for MAP 2 group, 13.90% for MAP 0.5 group and 6.69% for P.G. 600 group. The differences were statistically significant between MAP 0.5 group and P.G. 600 group (χ^2 test $p<0.05$) and not significant between the other groups (χ^2 test $p>0.05$). Total proportion of animals that show estrus and were inseminated was 96.28% for the control group, 98.01% for MAP 2 group, 89.56% for MAP 0.5 group and 91.22% for P.G. 600 group. For the table we see that were statistically significant differences between MAP 2 group and MAP 0.5 group (χ^2 test $p<0.05$) and not significant between the other groups (χ^2 test $p>0.05$). The proportion of animals that show estrus from the control group was similar with the animals that show estrus after the administration of PMSG, about 96.3% [3]. The results that we obtain at the group with MAP 2 (98.01%) was higher then the results that were obtain by other authors (95.1) using same product [3].

In table 2 are presented the results regarding the conception rate at 28 and 56 days after the artificial insemination and farrowing rate.

Table 2. Results regarding conception rate and farrowing rate

Specification	Conception rate at 28 days		Conception rate at 56 days		Farrowing rate	
	n	%	n	%	n	%
Control	477	92.26^{aA}	469	90.72^{aA}	440	$85,11^{aA}$
MAP 2	498	91.71^{aA}	482	88.76^{aA}	467	$86,00^{aA}$
MAP 0.5	186	83.41^{a}	182	81.61^{a}	171	$76,68^{a}$
PG 600	207	86.61^{a}	201	84.10^{a}	188	$78,66^{ac}$
TOTAL	1368	89.88	1334	87.65	1266	81,61

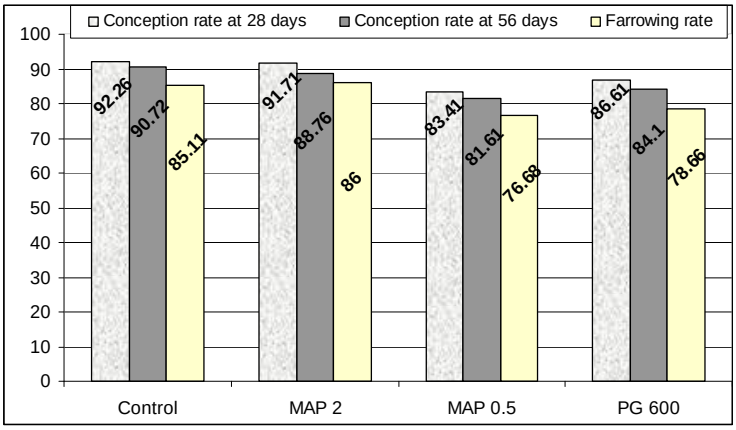

Figure 2. Graphic representation of the conception rate at 28 and 56 days and farrowing rate

From table above we observe that the pregnancy rate at 28 days after the artificial insemination was 92.26% for the control group, 91.71% for MAP 2 group, 83.41% for MAP 0.5 group and 86.61% for P.G. 600 group. The differences regarding the conception rate at 28 days were statistically significant (χ^2 test $p<0.05$) between control group and MAP 0.5 group and not significant between the other groups (χ^2 test $p>0.05$).

Regarding the conception rate at 56 days after the insemination, that was 90.72% for the control group, 88.76% for MAP 2 group, 81.61% for MAP 0.5 group and 84.10% for P.G. 600 group. The differences between the control and MAP 2 groups, on one side and MAP 0.5 and P.G. 600

groups on the other side, were statistically

The farrowing rate was 85.11% for control group, 86.00% for MAP 2 group, 76.68% for MAP 0.5 group and 78.66% for P.G. 600 group. The differences between the control and MAP 2 groups, on one side and MAP 0.5 and P.G. 600 groups on the other side, were statistically significant (χ^2 test $p<0.05$).

The farrowing rate for the groups with Maprelin XP 10 was smaller in our experiment comparing to the results (96.9%) obtained by other authors using same product [3].

4. Conclusions

1. The proportion of sows that show estrus in the first 7 days from weaning was higher for control, MAP 2 and P.G. 600 groups comparatively with MAP 0.5 group, but the differences were not statistically significant (χ^2 test $p>0.05$).

2. Conception rate at 28 and 56 days was statistically significant higher for control, MAP 2 and P.G. 600 groups comparing to MAP 0.5 group (χ^2 test $p<0.05$).

significant (χ^2 test $p<0.05$).

3. Farrowing rate was significantly higher for control and MAP 2 groups comparing to MAP 0.5 and P.G. 600 group (χ^2 test $p<0.05$).

4. At the end we can say that Maprelin XP 10 and P.G. 600 can be successfully use to induce fertile estrus to the wean sows during the summer season.

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