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## PROSTAGLANDIN F<sub>2α</sub> SUPPLEMENTED SEMEN IMPROVES LANDRACE BOARS SPERM MOTILITY

### STUDIU PRIVIND MOBILITATEA SPERMATOZOIZILOR CA URMARE A ADĂUGĂRII PROSTAGLANDINEI F<sub>2α</sub> IN MATERIALUL SEMINAL OBȚINUT DE LA VIERII LANDRACE

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*This study investigated whether the sperm motility from Landrace boars improves when PGF<sub>2α</sub> (Dinolytic®; 5 mg PGF<sub>2α</sub> /ml) was added to diluted semen. Boars from one large production unit, were manually collected; semen was either enriched with PGF<sub>2α</sub> (group 1, n=38), either untreated (group 2, n=32). Total volume of semen collected, percent of motility and number of obtained doses were recorded. The highest sperm volume collected from the two groups is corresponding to ejaculates from Landrace boars with PGF<sub>2α</sub> supplemented semen (267.6 ml). Regarding motility, the sperm collected from Landrace boars with PGF<sub>2α</sub> supplemented semen was higher from the one collected from Landrace boars with untreated semen (81.37%) and very significant differences were statistically determined. The ejaculates with highest number of obtained doses is corresponding to the ones collected from boars with PGF<sub>2α</sub> supplemented semen (25.21). Only boars from the first group (with PGF<sub>2α</sub> supplemented semen) showed motility over 70% and even 100%. The untreated semen showed motility values around 65-70%.*

**Keywords:** PG F<sub>2α</sub>, semen, boar, sperm motility

#### Introduction

Collecting semen from a boar and inseminating a sow to induce pregnancy has been successfully practiced for many years.

The only way to have an impact on the fixed costs per semen dose is to produce more doses per boar place; effectively to serve more sows per boar. The key to enhancing artificial insemination efficiency is to find ways of reducing costs whilst never compromising performance.

Improved fertility will maximize productivity of the swine industry. Myometrial contractility is an essential component in the fertilization process

because it is the mechanism by which spermatozoa are transported to the site of fertilization.  $\text{PGF}_{2\alpha}$  in semen has been shown to induce uterine contractions, thereby, facilitating sperm transport during fertilization (Cheng, 2001).

Addition of prostaglandin  $\text{F}_{2\alpha}$  ( $\text{PGF}_{2\alpha}$ ) to extended boar semen has been shown to slightly increase reproductive parameters in sows such as the conception rate and the total number of piglets born alive (Maes, 2003).

### **Materials and Methods**

The researches were carried out on two groups of boars raised in intensive system with controlled microclimate. The aim of this study was to determine whether there are differences between sperm motility from prostaglandin  $\text{F}_{2\alpha}$  supplemented semen compared to sperm motility from untreated diluted semen.

Semen was collected from two groups of Landrace boars (group 1, n=38; group 2; n=38) of various ages housed in the same environment. The ejaculate was collected from each boar using the gloved hand technique into a pre-warmed thermal mug containing a plastic collection bag with a filter. The semen was then weighed, and the weight was used to estimate the volume of sperm containing ejaculate (1g=1ml).

The ejaculate was then massaged (to ensure a consistent sample), and a droplet was placed on a pre-warmed glass slide (to 37 ° C). Then, all the ejaculates obtain from boars from group 1 were supplemented with prostaglandin  $\text{F}_{2\alpha}$  (Dinolytic®; 5 mg  $\text{PGF}_{2\alpha}$  /ml). Ejaculates obtain from boars from group 2 were untreated.

The concentration was then established, and the number of doses and the total extended volume for that ejaculate were determined. The following information (boar ID, total volume collected, percent of motility, number of obtained doses) was then recorded. Sperm mobility has been visually estimated regarding the percentage of motile spermatozoa by light microscopy, by a skilled and experienced technician which may have greatly influences about the relative accuracy of this research.

### **Results and Discussion**

This study investigated whether the sperm motility from Landrace boars improves when  $\text{PGF}_{2\alpha}$  (Dinolytic®; 5 mg  $\text{PGF}_{2\alpha}$  /ml) was added to diluted semen. Boars from one large production unit, were manually collected; semen was either enriched with  $\text{PGF}_{2\alpha}$  (group 1, n=38), either untreated (group 2, n=32).

During the experiment it has been recorded the total volume collected, percent of motility and number of obtained doses. Two statistical analyses were calculated using Mann-Whitney test as presented in table 1.

Table 1

Statistical analyses for volume collected, sperm motility and number of obtained doses

| Specification       | Group 1   |                          | Group 2   |                          |
|---------------------|-----------|--------------------------|-----------|--------------------------|
|                     | $\bar{x}$ | Coefficient of variation | $\bar{x}$ | Coefficient of variation |
| Volume (ml)         | 267.6     | 37.63                    | 243.2     | 23.7                     |
| Motility (%)        | 81.37     | 19.86                    | 66.56     | 4.84                     |
| Number of doses (n) | 25.21     | 37.36                    | 21.5      | 25.69                    |

Regarding motility, the sperm collected from Landrace boars with PGF<sub>2</sub>α supplemented semen was higher from the one collected from Landrace boars with untreated semen (81.37%); very significant differences were determined for motility (p<0.001).

The ejaculates with highest number of obtained doses is corresponding also with the ones collected from Landrace boars with PGF<sub>2</sub>α supplemented semen (25.21). There were no significant differences (p>0.05) for number of obtained doses between the two groups of Landrace boars.

Based on the fact that sperm motility from Landrace boars semen supplemented with PGF<sub>2</sub>α was the only parameter with very significant differences, it has been also determined the number of Landrace boars that had ejaculates with motility between 55 and 100% (figure 1). It can be notes that only boars from the first group (with PGF<sub>2</sub>α supplemented semen) showed motility over 70% and even 100%. The untreated semen showed motility values around 65-70%.

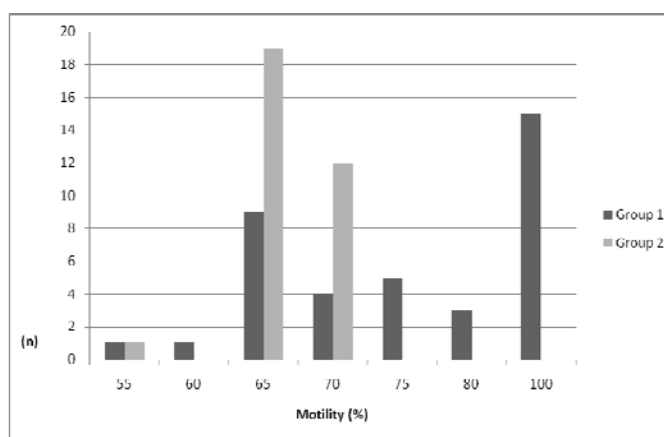


Fig. 1. Sperm motility from Landrace boars semen supplemented with PGF<sub>2</sub>α versus untreated semen

## Conclusion

The highest sperm volume collected from the two groups is corresponding to ejaculates from Landrace boars with PGF<sub>2</sub>α supplemented semen (267.6 ml), but statistically there are no significant differences between the two groups.

Regarding motility, the sperm collected from Landrace boars with PGF<sub>2</sub>α supplemented semen was higher from the one collected from Landrace boars with untreated semen (81.37%) and very significant differences were determined.

The ejaculates with highest number of obtained doses is corresponding to the ones collected from boars with PGF<sub>2</sub>α supplemented semen (25.21), but statistically there are no significant differences.

## References

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