

# THE EFFECTS OF PROSTAGLANDIN F<sub>2α</sub>, OXYTOCIN AND GONADOTROPIN RELEASING HORMONE ON EJACULATE CHARACTERISTICS IN THE DOG

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Prostaglandin F<sub>2α</sub> (PGF<sub>2α</sub>), oxytocin and gonadotropin releasing hormone (GnRH) have been used in bulls, rams, boars, stallions or rodents to increase sperm numbers in the ejaculate. Improving sperm quantity in the canine ejaculate would benefit all assisted reproductive techniques used in this species. The purpose of the present study was to evaluate the effects of PGF<sub>2α</sub>, oxytocin and GnRH on canine ejaculate characteristics.

Eight, mature, medium size (25-30 kg), mixed breed dogs were randomly assigned to one of four treatment groups (N=2 dogs each); each group received one treatment per week for four weeks. Treatments were assigned based on a Latin Square design. A two-week training period was used to acclimate the dogs to manual semen collection. Treatments were 0.1 mg/kg PGF<sub>2α</sub> 15 minutes prior to collection, 2.5 units/dog oxytocin 10 minutes prior to collection, 50 µg/dog GnRH 60 minutes prior to collection, or 1.0 ml of saline 30 minutes prior to collection. An evaluator that was blinded to treatment analyzed ejaculate characteristics. Samples were evaluated for semen volume, concentration, motility, morphology, total sperm number and total morphologically normal motile sperm number (TNMS). In addition, a subjective ease of collection score was assigned following every collection (Scale 1-9, 1 being easiest to manually ejaculate).

Semen concentration, motility and morphology were not different between treatments. Semen volume was greater for dogs treated with PGF<sub>2α</sub> or oxytocin compared to saline. Total sperm number and TNMS were greater when dogs were treated with PGF<sub>2α</sub> compared to oxytocin, GnRH and saline (p<0.05). The subjective ease of collection score was lower for dogs receiving PGF<sub>2α</sub> compared to GnRH or saline (p<0.05).

| Treatment         | Volume (ml)          | Total Sperm Number (x 10 <sup>6</sup> ) | TNMS (x 10 <sup>6</sup> ) | Ease of Collection   |
|-------------------|----------------------|-----------------------------------------|---------------------------|----------------------|
| PGF <sub>2α</sub> | 1.94 <sup>a</sup>    | 449.25 <sup>a</sup>                     | 321.30 <sup>a</sup>       | 2.37 <sup>b</sup>    |
| Oxytocin          | 1.93 <sup>a</sup>    | 236.44 <sup>b</sup>                     | 175.90 <sup>b</sup>       | 3.00 <sup>a, b</sup> |
| GnRH              | 1.77 <sup>a, b</sup> | 229.13 <sup>b</sup>                     | 158.68 <sup>b</sup>       | 4.37 <sup>a</sup>    |
| Saline            | 1.16 <sup>b</sup>    | 165.63 <sup>b</sup>                     | 117.04 <sup>b</sup>       | 4.75 <sup>a</sup>    |

<sup>a, b</sup> Means with the same letter are not statistically different.

In summary, administration of PGF<sub>2α</sub> or oxytocin prior to semen collection increased semen volume and PGF<sub>2α</sub> increased total sperm number in the ejaculate of the dog. It did not appear that treatment with GnRH had an effect on semen parameters evaluated in this study.

Keywords: dog, sperm number, prostaglandin F<sub>2α</sub>, oxytocin, GnRH