

EJACULATION INDUCTION WITH PROSTAGLANDINS IN THE DONKEY

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Introduction

Donkeys are territorial animals who don't have herding behavior and whose semen extraction is better with a jenny and peace^{1,2,3}. This extraction can take from 6 to 32 minutes, or even more⁴.

Different methods of chemical induction of ejaculation have not been successful^{2,5}. Prostaglandins have been reported to cause a facilitatory effect on erectile function and ejaculatory behavior⁶.

There's been an increasing demand of products coming from the donkey which makes the improvement of its production a good research inversion.

Results

Table 1. Mean, standard deviation and one-sided t-paired test results

Data	Mean ± Standard deviation		p-value
	CTRL	PGF	
Nº of mounts	4.125 ± 1.099	1.437 ± 0.669	6.047e-13
Inoc-erection Int	16.593 ± 3.201	6.593 ± 1.499	< 2.2e-16
FC-erection Int	15.187 ± 3.276	4.906 ± 1.653	< 2.2e-16
Nº of erections	1.250 ± 0.439	1.062 ± 0.245	0.01577
Inoc-ejaculation Int	18.812 ± 4.169	8.966 ± 2.281	1.746e-14
FC-ejaculation Int	17.468 ± 3.818	7.633 ± 2.296	4.694e-14
Pre-filtration SV	63 ± 22.253	51.333 ± 21.868	0.00000008545
Post-filtration SV	60.875 ± 21.940	49.766 ± 22.375	0.00000003081

CTRL: control group / PGF: prostaglandins group / Inoc: inoculation / Int: interval / FC: female contact/ SV: semen volume

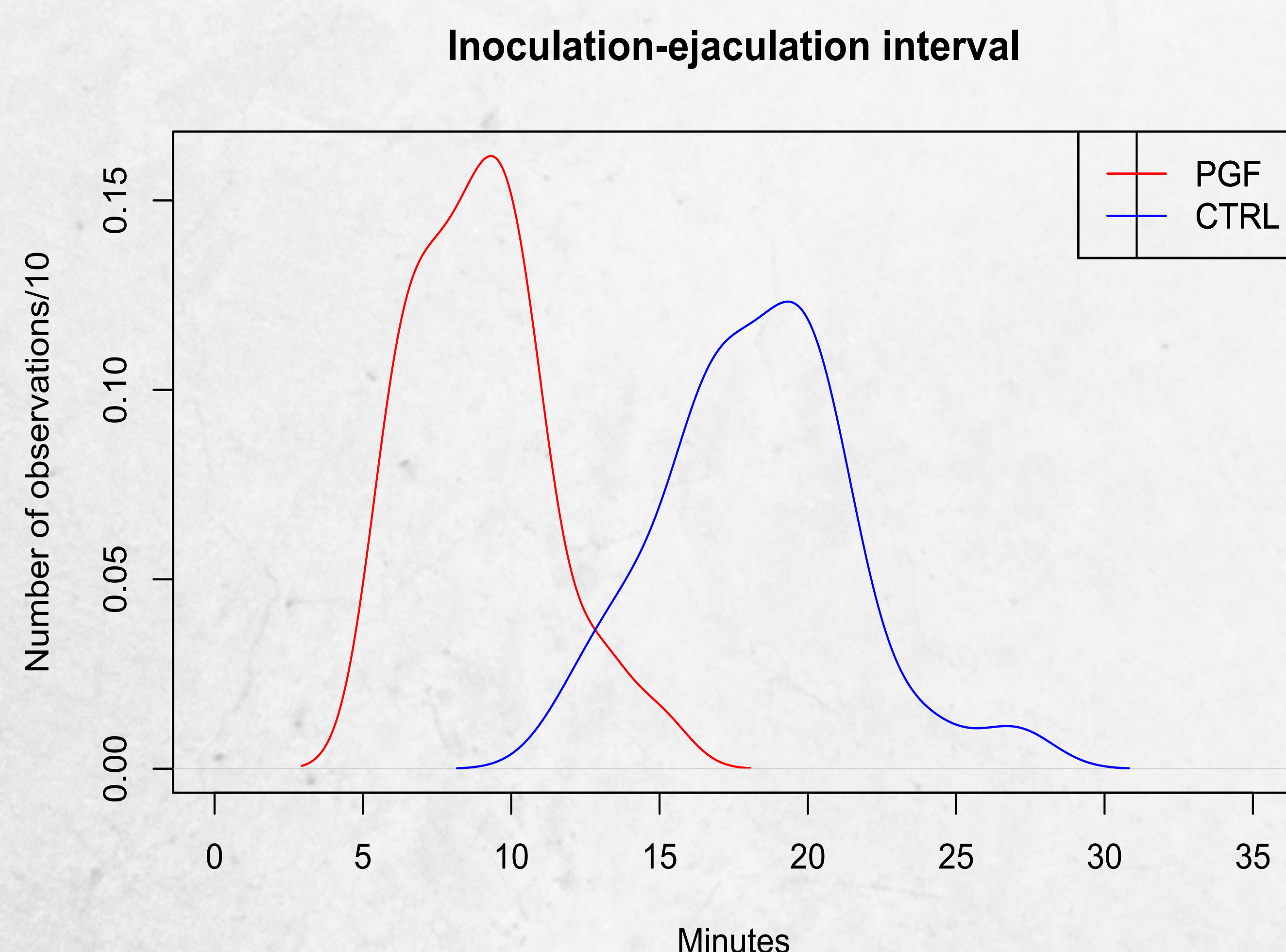


Figure 1. Comparison of density graphs for the variable inoculation-ejaculation interval. Control group (blue) and group treated with PGF (red). (PGF: prostaglandins / CTRL: control)

Goals

- To observe the effect produced by the injection of prostaglandins (PGF_{2α}) to extract semen.
- To compare the data obtained to normal extraction.
- To determine if its application is useful to improve semen extraction.

Material and methods

Sixteen male donkeys of the Catalan, Balearic and Amiata breeds were used for the study. Semen collection was performed 4 times in every donkey: 2 normal extractions and 2 with previous PGF_{2α} injection (1 mL IM of Cloprostenol). Data of the time of inoculation, the start of interaction with the jenny, the first mount without erection and erection, ejaculation and number of mounts with and without copula was taken.

Discussion

The inoculation of prostaglandins is effective in the study, all the parameters are reduced when this is done. The alternative hypothesis can be accepted because the p-value is significant.

The volume of semen decreases but the spermatozoa concentration increases. This can happen because when PGF_{2α} is inoculated, the time of ejaculation is reduced, and the accessory glands can't secrete the normal amount of seminal plasma. Another option is that with less time there's not enough sexual stimulation, and therefore less prolactin and other factors participating in the process, so the volume of semen decreases^{7,8}. The concentration of spermatozoa may increase because of a contraction of the epididymis tail when injecting prostaglandins or because if seminal plasma decreases, it can't produce its detrimental effect on sperm and then there's better conservation⁹.

No side effects such as sweating were observed contrary to other studies¹⁰.

Conclusions

- Injecting prostaglandins seems to be a good method to reduce the time of ejaculation in the donkey.
- This could mean an improvement in the production of semen and proof to be very useful nowadays that the demand of donkey derivate products has increased.



References

- [1] Woodward SL. 1979. The social system of feral asses (*Equus asinus*). *Z Tierpsychol.* 49:304–316. [2] Mráčková M, Hodinová K, Vyvial M, Horáčková E, Sedlinská M. 2017. Failure of pharmacologically - Induced ejaculation in donkeys (*Equus asinus*) under field conditions: A test of two different treatment protocols. *Isr J Vet Med.* 72(4):35–38. [3] Canisso IF, Coutinho da Silva MA, Davies Morel MCG. 2009. How to manage jacks to breed mares. *AAEP Proc.* 55(January):342–348. [4] Kreuchauf A. 1984. Reproductive physiology in the jackass. *Anim Res Devel.* 20:51–78. [5] Canisso IF, Panzani D, Miró J, Ellerbrock RE. 2019. Key Aspects of Donkey and Mule Reproduction. *Vet Clin North Am - Equine Pract.* 35(3):607–642. [6] Veronesi MC, De Amicis I, Panzani S, Kindahl H, Govoni N, Probo M, Carluccio A. 2011. PGF_{2α}, LH, testosterone, oestrone sulphate, and cortisol plasma concentrations around sexual stimulation in jackass. *Theriogenology.* 75(8):1489–1498. [7] Pickett, B. W., and J. L. Voss. 1973. Reproductive management of the stallion. *Gen Ser. Colorado State Univ. Exp. Sta., Ft. Collins.* 934. [8] Thomson CH, Thompson DL, Kincaid LA, Nadal MR. 1996. Prolactin Involvement with the Increase in Seminal Volume after Sexual Stimulation in Stallions. *J Anim Sci.* 74(10):2468–2472. [9] Akcay E, Reilas T, Andersson M, Katilla T. 2006. Effect of seminal plasma fractions on stallion sperm survival after cooled storage. *J Vet Med.* 53:481–485. [10] Kreider J., Ogg W., Turner JW. 1981. Influence of prostaglandin F_{2α} on sperm production and seminal characteristics of the stallion. *Prostaglandins.* 22(6):903–913.