



EFFECT OF THE BREED ON THE QUALITY OF THE DOG SEMEN PRESERVED IN FRESH

Alejandro Córdova Izquierdo¹, Gustavo Ruiz Lang¹, Jorge Saltijeral Oaxaca¹, Juan Eulogio Guerra Liera², Edmundo Abel Villa Mancera³, Ma de Lourdes Juárez Mosqueda⁴, Armando Gómez Vázquez⁵, Pedro Sánchez Aparico⁶, Carlos J. Bedolla Cedeño⁷ and Jaime Olivares Pérez⁸

¹Departamento de Producción Agrícola y Animal. Universidad Autónoma Metropolitana Unidad Xochimilco. Ciudad de México, México; ²Facultad de Agronomía. Universidad Autónoma de Sinaloa, México. ³Facultad de Veterinaria. Benemérita Universidad autónoma de Puebla, México. ⁴FMVZ-UNAM. ⁵División Académica de Ciencias Agropecuarias. Universidad Juárez Autónoma de Tabasco, México. ⁶FMVZ-UAEM. ⁷Universidad de San Nicolás de Hidalgo, Michoacán, México. ⁸Unidad Académica de Veterinaria. Universidad Autónoma de Guerrero, México

ARTICLE INFO

Article History:

Received 05th December, 2020
Received in revised form
10th January, 2021
Accepted 25th February, 2021
Published online 30th March, 2021

Key Words:

Motility, Viability, Acrosomal integrity,
Sperm, Sperm quality.

*Corresponding author:

Alejandro Córdova Izquierdo

ABSTRACT

In this work, fresh semen from four different races was analyzed, viability, and acrosomal integrity were evaluated. With the objective of assessing the effect of the breed on the quality of freshly preserved dog semen. The races used were Pitbull, Pomerania, Chihuahua, and Creoles. Obtaining as results. The viability of the sperm ranges from very good to regular, with 65% in all three repetitions, in the Pitbull breed with an acrosomal integrity of $75 \pm 5\%$ of whole sperm. In the Pomeranian breed, $63.3 \pm 12.5\%$ were observed in acrosomal integrity. In the Chihuahua breed, $83.3 \pm 5.7\%$ in acrosomal integrity, while in Creole dogs, $71.6 \pm$ was obtained and in acrosomal integrity $71.6 \pm 18.9\%$. In conclusion it can be said that there is no effect of breed on the quality of freshly preserved dog semen.

Copyright © 2021. Alejandro Córdova Izquierdo et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Alejandro Córdova Izquierdo, Gustavo Ruiz Lang, Jorge Saltijeral Oaxaca, Juan Eulogio Guerra Liera, Edmundo Abel Villa Mancera, Ma de Lourdes Juárez Mosqueda, Armando Gómez Vázquez, Pedro Sánchez Aparico, Carlos J. Bedolla Cedeño and Jaime Olivares Pérez. "Effect of the breed on the quality of the dog semen preserved in fresh", 2021. *International Journal of Current Research*, 13, (03). 16688-16689.

INTRODUCTION

In Mexico there is little information about reproductive biotechnologies in canines, this is because the conservation of semen either fresh or frozen is not yet an easy tool to achieve in the canine species (Ake-Martínez, 2012). An issue that has concerned researchers for decades is the performance of precise laboratory techniques that can effectively test the fertilizing capacity of sperm, which is why the need to evaluate sperm viability, ejaculate cell count, in each method, membrane integrity and acrosomal integrity (Choez, 2013). Sperm are delicate cells that need a series of processes to survive cryopreservation, with the use of diluents the cell suffers as little damage as possible to these conservation procedures, which is why a protocol that helps to sperm conservation (Martínez et al., 2008). The objective of this work is to assess the effect of the breed of dog on the sperm quality of fresh preserved semen.

MATERIAL AND METHODS

Semen samples of 4 different breeds of one year of age (Pitbull, Pomeranian, Chihuahua and Criollo) were analyzed, making 3 repetitions of each breed, taking 3 samples from each repetition, with a period between the first and second sampling of two days, and three days between the second and third. The samples were first taken with the gloved hand technique. Once it was obtained, the MRA diluent was administered and it was transported at temperature as quickly as possible to the workplace where its viability and NAR were analyzed.

RESULTS

When determining the microscopic variables for the seminal evaluation of the four races, in the first ejaculated sample, $73.3 \pm 5.7\%$ of live spermatozoa were observed in the Pitbull breed

with an acrosomal integrity of $75 \pm 5\%$ of intact spermatozoa. In the Pomeranian breed, $63.3 \pm 15.2\%$ of live spermatozoa and $63.3 \pm 12.5\%$ in acrosomal integrity were observed. In the Chihuahua breed, we could observe that $61.6 \pm 28.4\%$ and $83.3 \pm 5.7\%$ were obtained in acrosomal integrity in live spermatozoa, while in Creole dogs, $71.6 \pm 18.9\%$ were obtained in live spermatozoa and $71.6 \pm 18.9\%$ in acrosomal integrity. For the second ejaculated sample, we were able to observe $66.6 \pm 11.5\%$ of live spermatozoa in the Pitbull breed and an acrosomal integrity of $75 \pm 5\%$. Corresponding to the Pomeranian race, $63.3 \pm 15.2\%$ and $63.3 \pm 12.5\%$ were obtained in live sperm in acrosomal integrity. For the Chihuahua breed we were able to observe $50 \pm 30\%$ of live sperm and $83.3 \pm 5.7\%$ in acrosomal integrity. In Creole dogs, $65 \pm 13.2\%$ of live sperm were obtained and for acrosomal integrity, $65 \pm 18.9\%$. In the third ejaculate sample, we had as a result for the Pitbull $63.3 \pm 11.5\%$ of live spermatozoa and $78.3 \pm 7.6\%$ in acrosomal integrity. In the Pomeranian race, in live sperm we found $60 \pm 10\%$ and an acrosomal integrity of $61.6 \pm 7.6\%$. For the Chihuahua breed, $55 \pm 27.8\%$ of live spermatozoa and $82.6 \pm 2.5\%$ in their acrosomal integrity were obtained. Finally, in the Creole dogs, we obtained $68.3 \pm 7.6\%$ of live spermatozoa and an acrosomal integrity of $68.3 \pm 11.7\%$.

DISCUSSION

The chosen age of the dogs was one year, since from this age the sperm present the best quality, on the contrary, when the age advances, the quality decreases, as mentioned by Rijsselaere et al., 2007 and Soares. et al., 2009. There are no differences in viability between the 4 evaluated breeds, so all breeds are considered to have a viability valued as good with an average of 60-85%. On the other hand, in motility there is no great difference between the races evaluated and due to the results found in all the races, it is classified as good as established by Butírica et al., 2009, which contradicts what Rijsselaere et al. Wrote. 2007 sperm from large breed dogs move less; According to Root, 2007, it says that frequent sperm collection may be associated with a higher percentage of motility, in our investigation the motility results were not altered between the second and third repetition of the sample collection, the values being very similar to those of the first take. Regarding acrosomal integrity, no differences were found in the 4 breeds evaluated, and all breeds were rated on average as good, in conclusion it can be said that there is no breed

effect on the quality of dog semen, since only A difference was found in the volume values, which according to Root Kustritz, 2006 is not an indicator of the quality of semen in dogs, and the other evaluations that are of importance in the quality as sperm concentration, which may be the most important factor which determines the probability of successful fertilization (Woodall and Johnstone, 1988), motility, and viability and acrosomal integrity. According to the results obtained in the three samples analyzed from the 4 different breeds, there is no difference in seminal quality between dog breeds, the only thing that varies is the amount of sperm cells due to the degree of ejaculation they have in each breed. In conclusion it can be said that there is no effect of breed on the quality of fresh preserved dog semen.

REFERENCES

- Aké López Jesús Ricardo. 2012. Efecto de los diluyentes trialidyl seagear sobre la congelación de semen canino. Bioagrocencias; 5 (1).
- Betancur G R, Gómez J O, Vásquez N A. 2011. Criopreservación de semen canino por congelación rápida con glicerol y Dimetilformamida. Revista Lasallista de Investigación; 8 (2): 9-17.
- Choez K. 2013. Efecto de la motilidad inicial y diferentes concentraciones de glicerol en la crioconservación de espermatozoides epididimarios de alpaca. Spermova; 3 (1).
- Martínez Jiménez Alejandro. 2008. Evaluación de semen en pastor alemán. Polivet-az.Rijsselaere T, Maes D, Hoflack G, Kruif A, Soom A V.2007. Effect of Body Weight, Age and Breeding History on Canine Sperm Quality Parameters Measured by the Hamilton-Thorne Analyser. Reprod Dom Anim; 42: 143–148.
- Root Kustritz M. V. 2006. Collection of tissue and culture samples from the canine reproductive tract. Theriogenology; 66:567–574.
- Soares J. M., Gleide F, Avelar, França L R. 2009. The seminiferous epithelium cycle and its duration in different breeds of dog (Canis familiaris). J. Anat; 215: 462–471.
- Woodall P. F., Johnstone I. P. 1988. Dimensions and allometry of testes, epididymides and spermatozoa in the domestic dog (Canis familiaris). Journals of reproduction and fertility; 82: 603- 609.
