شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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HANAA ALY

Cairo University
Faculty of Veterinary Medicine
Theriogenology Department

Studies on Cryopreservation of Epididymal Sperm in Dogs

Thesis presented by

Eman Fayez Eldawoudy Foda

(B.V.Sc, Cairo University, 2018)

For the degree of Master

(Theriogenology)

Under supervision of

Dr. Mohamed A. Ismail El-Sayed
Professor of Theriogenology
Faculty of Veterinary Medicine
Cairo University

Dr. Ali Salama Hassan Soliman
Lecturer of Theriogenology
Faculty of Veterinary Medicine
Cairo University

Dr. Zaher Mohamed Ibrahim Rawash
Senior Researcher, A.I. and E.T. Department
Animal Reproduction Research Institute
Agriculture Research Center

2022

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Supervision sheet

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Name: **Eman Fayez Eldawoudy Foda**
Date and place of birth: **28/3/1995, Damietta**
Nationality: **Egyptian**
Degree: **M.V.Sc**
Specialty: **Theriogenology**
Title of thesis: Studies on Cryopreservation of Epididymal Sperm in Dogs
Supervisors:
Prof. Dr. Mohamed Ahmed Ismail El-Sayed
Professor of Theriogenology, Faculty of Veterinary Medicine, Cairo University.
Dr. Ali Salama Hassan Soliman
Lecturer of Theriogenology, Faculty of Veterinary Medicine, Cairo University.
Dr. Zaher Mohamed Ibrahim Rawash
Senior Researcher, A.I. and E.T. Dept. Animal Reproduction Research Institute, Agriculture Research Center.

Abstract

Different traits of cryopreservation of canine epididymal sperm have been studied for different breeds of dogs. Studies were conducted on epididymal sperm (132 dogs) during the period from February 2021 till September 2021. Five studies were done to investigate some factors affecting cryopreservation of epididymal dog sperm, such as the effect of different collecting methods of epididymal dog spermatozoa (mincing and flushing), type of extenders (OptiXcell, INRA 96 and Tris egg yolk fructose extenders) and type of cryoprotectants [glycerol, dimethyl sulfoxide (DMSO), dimethyl formamide (DMF)], egg yolk from different avian species (chicken, duck and quail), the effect of addition of ascorbic acid (0.45, 0.90 mg/ml), melatonin (0.002, 0.0035 mol/L) and zinc oxide nanoparticles (100, 200 µg/ml) respectively to cryopreservation medium of Tris extender on epididymal dog sperm cryo survival. Results were evaluated by post-thaw sperm motility and viability, sperm acrosomal integrity, sperm membrane integrity and sperm DNA integrity. It was found that there was no significant difference between mincing and flushing methods on epididymal dog spermatozoa, although the mincing method was more practical and quick. OptiXcell can successfully be used to freeze canine epididymal spermatozoa, and DMSO (7%) could be used as an alternative to glycerol in Tris-based extenders. Quail egg yolk improved freeze-thaw sperm quality compared to egg yolk from chicken and duck. Addition of either ascorbic acid (0.90 mg/ml), melatonin (0.0035 mol/L) or ZnONPs (100 µg/ml) to Tris extenders resulted in a significant increase in the percentage of motility, viability, membrane intact, and acrosome-intact dog epididymal sperm, as well as the maintenance of DNA integrity and the reduction of lipid peroxidation at the membrane level. Further studies are required to assess their effect on fertility.

(***Key words**: Dog, epididymal sperm, cryopreservation, cryoprotectants, egg yolk)*

DEDICATION

To my dear parents, lovely husband, my son, my sisters and my brother.

Thank you for everything.

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