

Abstract of DVM thesis No:14950, Faculty of Veterinary medicine, Urmia University

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Author: Parin Namaki

Title of thesis: Evaluation of the effects of Epigallocatechin-3-gallate chitosan nanoparticles on quality of canine semen during storage at the refrigerator

Summary

Cold semen artificial insemination is one of the available techniques for raising pets. Nevertheless, the cooling process leads to a significant deterioration in sperm quality due to the increased oxidative stress. The aim of the present study is to investigate epigallocatechin-3-gallate-chitosan nanoparticles for the preservation of canine sperm at 4 °C over a period of 72 hours. In this study, 25 ejaculates from three mix breed dogs were collected and diluted in a Tris-based diluent. Then they were divided into 5 parts in control groups (Tris-based extender) and treated with 0.5, 1, 1.5 and 2 µg epigallocatechin-3-gallate chitosan nanoparticles. Sperm collections, including general and progressive motility, motility characteristics, sperm viability, DNA damage and plasma membrane functionality were assessed over 72 hours. The results obtained showed that the progressive and total motility and motility characteristics during the 72-hour storage were significantly higher in the 2, 1.5 and 1 µg epigallocatechin-3-gallate chitosan nanoparticles groups compared to the control group. Also examining viability, Plasma membrane function and DNA damage shows that adding 2, 1.5 and 1 µg epigallocatechin-3-gallate chitosan nanoparticles to the extender can improve these parameters compared to the control group. Therefore, the addition of epigallocatechin-3-gallate chitosan nanoparticles can improve the quality of dog semen during liquid storage. Further studies are needed to determine the effects of supplementing the Tris-based extender with epigallocatechin-3-gallate chitosan nanoparticles on fertility.

Keywords: liquid storage, dog sperm, epigallocatechin-3-gallate chitosan, nanoparticles