

**DVSC Dissertation Summary No. 12278, Faculty of Veterinary Medicine, Urmia University**  
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**Title of thesis:** Effect of onion carbon quantum dots on dog semen quality during storage at 4°C

**Abstract:**

Artificial insemination is one of the most accessible techniques for raising domestic animals that can be easily used. It has been shown that refrigeration significantly reduces sperm quality. The purpose of this study was to investigate the effects of onion carbon nanoparticles and selenium nanoparticles on the preservation of dog semen at 4 degrees Celsius during a period of 72 hours. In this study, 20 ejaculates were collected from 3 mixed breed dogs aged 3-7 years and diluted in a Tris-based diluent. Then, they were divided into 10 parts in control groups, and treated with 0.5, 1 and 1.5 µg of selenium nanoparticles and 100, 200, 300, 400, 500, 600 µg of onion nano quantum carbon. Sperm parameters including percentage of viability, plasma membrane continuity, DNA damage rate, malondialdehyde level, total capacity, general motility, progressive motility and sperm motility indicators including VCL, VSL, VAP, STR, BCF of dog sperm at the duration of 72 hours were evaluated. The obtained results showed that the plasma membrane continuity, total capacity, general and progressive sperm motility, motility indices and sperm viability during 72 hours of storage in groups 5 and 6, respectively, at concentrations of 500 and 400 µg of the carbon nano quantum of onion were significantly higher compared to the control group. The percentage of DNA damage and the amount of malondialdehyde in groups 5 and 6 at the concentrations of 400 and 500 µg of onion nano quantum carbon had the lowest percentage compared to the control group. As a result, the present study showed that the addition of onion nano quantum carbon at the concentrations of 400 and 500 µg to dog semen can improve the parameters of dog semen after storage in liquid form.

**Key words:** sperm, onion nano quantum carbon, antioxidant, selenium nanoparticles, dog