

Summary of the Ph.D thesis No., Faculty of Veterinary Medicine, Urmia University.

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Title: Comparison of Sperm Characteristics, Antioxidant, and Oxidant Levels in Bull Semen Frozen with Four Widely Used Extenders

Summary:

Background: Effective semen harvesting includes obtaining the greatest number of sperm with the highest possible quality in each ejaculation. Sperm only survives for a very short time in fresh semen, and slow cooling to 5 °C kills a large number of sperms, necessitating its protection during cooling and deep freezing. **Aims:** This study aimed to compare the semen quality parameters and antioxidant levels in four widely used extenders (manual, Triladyl, Steridyl, and Andromod). **Methods:** Semen samples were obtained from a total of 12 dual-purpose Simmental bulls (Fleckvieh) kept in the *Iran Simmental Cattle Breeding Center* for a period of 3 months using an artificial vagina (adjusted at 43 °C). Sperm viability, motility, abnormal morphology, plasma membrane integrity, DNA damage, chromatin quality, total antioxidant capacity (TAC), and lipid peroxidation (MDA) were evaluated. **Results:** The highest progressive motility, viability, plasma membrane integrity, and TAC and the lowest levels of MDA in the frozen-thawed semen belonged to the semen group frozen with a Triladyl extender. Some CASA parameters such as curvilinear velocity (VCL), straight-line velocity (VSL), average path velocity (VAP), lateral head displacement (ALH), and beat cross frequency (BCF) were higher in the frozen-thawed semen than in other groups, indicating a significant difference from the manual extender. **Conclusion:** According to the results, among the extenders studied, Triladyl was the most suitable for semen freezing of Simmental bulls.

Key words: Andromod, Manual extender, Semen quality, Simmental, Steridyl, Triladyl