



## IN VITRO EVALUATION OF HONEY BEE (APIS MELLIFERA) SPERMATOZOA CRYOPRESERVED WITH MELATONIN SUPPLEMENTED EXTENDERS

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#### KEY WORDS

- ✓ Bee Semen
- ✓ Melatonin
- ✓ Cryoprotectant
- ✓ Antioxidant
- ✓ Oxidative Stress

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#### THESIS ABSTRACT

Our country ranks second in the world in terms of honey production statistics, but lags behind other countries in terms of honey yield per colony. The durability of bee races is important in this regard. Itinerant beekeeping causes the loss of resistant races and the purity of the races deteriorates as a result of uncontrolled mating. Therefore, semen from bees with high quality and superior genetics should be obtained and stored for economic and sustainable beekeeping.

In our study, the changes in sperm quality of fresh bee semen samples after freezing and the effects of melatonin addition on these changes were investigated. Motility, plasma membrane functional integrity, acrosome integrity and DNA integrity were determined in freshly collected semen samples. It was determined that freezing had negative effects especially on motility, plasma membrane and acrosomal integrity.

#### APPLICATION AREAS OF THE THESIS RESULTS

My thesis results can be used in gene breeding studies in bees and artificial insemination of bees, freezing and thawing of bee semen.

#### ACADEMIC ACTIVITIES

Alcay, S., Ustuner, B., Aktar, A., Mulkpınar, E., Duman, M., **Akkasoglu, M.**, & Cetinkaya, M. (2020). Goat semen cryopreservation with rainbow trout seminal plasma supplemented lecithin - based extenders. *Andrologia*, 52(4), e13555.

Alcay, S., Cakmak, S., Cakmak, I., Aktar, A., Yilmaz, M., Ustuner, B., ... & Zekariya, N. U. R. (2021). L-carnitine supplemented extenders improve post-thawing quality of honey bee drone (*Apis mellifera*) spermatozoa. *Kafkas Üniversitesi Veteriner Fakültesi Dergisi*, 27(4).

