

EFFECT OF NANO-OZONE SOLUTION ON IN VITRO NUCLEAR OOCYTE MATURATION IN DOGS

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- ✓ Antioxidant
- ✓ CDK1/Cyclin B1 gene expression
- ✓ In Vitro Maturation
- ✓ Dog
- ✓ Nano-ozone

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THESIS ABSTRACT

In vitro maturation (IVM) rates of dog oocytes are quite low compared to other species. The important problem in IVM is the formation of reactive oxygen species (ROS), and the simplest approach to prevent this is to prepare the media with antioxidant substances. In this study, nano-ozone solution, which has both oxidant and antioxidant properties, was used. The effect of nano-ozone solution on nuclear morphology in dog oocytes, oxidant/antioxidant status of the culture medium and expression levels of maturation-related genes were evaluated. Additionally, the ferric ion reducing antioxidant power (FRAP) test was used to evaluate antioxidant capacity.

According to the study results, nano-ozone alleviated oxidative stress parameters in IVM, induced development to the MII stage and increased maturation-related gene expression. Nano-ozone effect varies depending on concentration. It is recommended to use the most appropriate nano-ozone dose during IVM as 0.5 µg/ml and 1 µg/ml.

APPLICATION AREAS OF THE THESIS RESULTS

It is thought that the use of nano-ozone, a new nano-technology product, as an antioxidant substance and the determination of appropriate doses in order to prevent oxidation reaction formation in the in vitro culture environment and to prevent/reduce oxidative stress will contribute to future studies.

ACADEMIC ACTIVITIES

Özalp, G. R., Üstüner, B., Avci, G., **Bari, Ö.**, Yılmaz, M. M., Denk, B., & Aktar, A. (2023). Vincristine-Associated Total Antioxidant and Oxidant Status of Ovaries and In Vitro Nuclear Oocyte Maturation in Dogs with Canine Transmissible Venereal Tumor. *Animal Reproduction Science*, 253, 107260. <https://doi.org/10.1016/j.anireprosci.2023.107260>

Özalp, R. G., Üstüner, B., **Bari, Ö.**, Aktar, A., Yavuz, A., & Sağırkaya, H. (2023). Partenogenetik Aktivasyonun Vitrikiye Köpek Oositleri Üzerine Etkisi. *Journal of Research in Veterinary Medicine*, 42(2), 70-75. <https://doi.org/10.30782/jrv.1326864>

