CLINICAL, COMPUTED TOMOGRAPHIC, HISTOPATHOLOGICAL, IMMUNOHISTOCHEMICAL, AND SEROLOGICAL INVESTIGATION OF THE EFFICACY OF OZONE, HYALURONIC ACID, AND OZONE-HYALURONIC ACID COMBINATION IN AN EXPERIMENTALLY INDUCED OSTEOARTHRITIS MODEL IN RATS

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THESIS ABSTRACT

This study investigated the comparative effects of intra-articular ozone, hyaluronic acid (HA), their combination, and systemic ozone therapy in a rat model of knee osteoarthritis induced by cranial cruciate ligament transection. The results showed that intra-articular ozone and the ozone-HA combination had notable chondroprotective and structural benefits. Histopathological and biochemical findings indicated reduced tissue damage and improved healing, highlighting the therapeutic potential of ozone, especially in combination with HA.

APPLICATION AREAS OF THE THESIS RESULTS

In conclusion, the ozone-HA combination therapy was shown to provide both structural protection and biochemical improvement. The synergy between the anti-inflammatory and antioxidant properties of ozone and the viscoelastic and cell-supportive effects of HA enhanced therapeutic efficacy. These findings not only offer valuable insights for clinical application but may also pave the way for novel treatment approaches in veterinary orthopedics.

ACADEMIC ACTIVITIES

1-Tuncludemir, Z., Cinar, I. C., Kupeli, Z. A., Ünlü, E., & Yalcin, S. (2024). *In vivo comparison of customized zirconia barriers in guided bone regeneration: An experimental study*. *Heliyon*, 10(11).
2- TÜBİTAK 1001 Project (121M309): "Long-term implantation of bilayered small-caliber vascular grafts produced from biodegradable polymeric fibers into the porcine carotid artery and holistic analysis of the preclinical process." — Research Scholarship Holder.
3- Ünlü, E., Gül Satar, N. Y., Kahya Demirbilek, S., & Beker, S. (2025). *Culture-guided management of recurrent otitis externa in a cat: A case report.* 1st International Cyprus Congress of Scientific Research, 21–23 March 2025, Near East University, Nicosia, TRNC, pp. 41–42.