Effect of uterine ozone therapy on oxidative stress parameters in mares

Dr Kave Koorehpaz, DVSc Candidate of Theriogenology, Department of Theriogenology, Faculty of Veterinary Medicine, Urmia University, Iran.

Abstract

Ozone (O3) is a molecule consisting of three atoms of oxygen, that share the same electrons, this particularity making it unstable [1]. O3 can either be toxic or safe when used clinically, depending on the dose, length of exposure and antioxidant ability of the tissue [2]. the use of ozone in medical practices is documented for more than 100 years. In veterinary medicine, ozone therapy can be performed by auto-hemotherapy, insufflation in bodily cavities such as rectal, vaginal, uterine and ear canal insufflation, ozone bagging around the target area, and ozonated oil for topical application [3]. The use of this therapy in reproductive health has recently been revised, mainly involving animal studies, demonstrating that ozone could aid in tubal occlusion, protect from endometritis and vaginitis and protect ovaries from ischemia and oocyte loss [4]. With the purpose of assessing the effects of uterine ozone therapy on oxidative stress (OS) parameters in mares, ten mares underwent three consecutive days of uterine ozone therapy by flushing the uterus with ozonated lactated Ringer's solution followed by insufflation with ozone-oxygen gas. Ozone therapy affected systemic oxidative stress markers in mares, leading to a reduction in uric acid levels, TAC-ABTS, TAC-ABTS+HRP, TAC-CUPRAC and TAC-FRAP, concomitantly with an increase on total oxidant capacity (TOC) at days 3 and 6 following therapy. no changes were observed on albumin and lipid peroxidation levels. for reduce oxidative stress, It is recommended to supply horses undergo breeding with some antioxidants such as ascorbic acid nevertheless, ozone therapy Reduced uterine blood flow associated with deprived placental development [5]. Finally, Equine medicine embraced ozone therapy with good results for several pathologies. Most studies also encourage the use of ozone for musculoskeletal disorders, urinary system disease, or as adjuvant therapy in oncological patients. In the end, Ozone therapy deserves more attention, as its therapeutic range has not yet been fully defined.

Recent Publications

1. Rubin, M.B. (2002). The History of Ozone. II. 1869- 1899 (1), Bull. Hist. Chem., 27 (2), 94–97.

2. Di Mauro, R., Cantarella, G., Bernardini, R., Di Rosa, M., Barbagallo, I., Distefano, A., Longhitano, L., Vicario, N., Nicolosi, D., Lazzarino, G., Tibullo, D., Gulino, M. E., Spampinato, M., Avola, R., & Li Volti, G. (2019). The biochemical and pharmacological properties of ozone: The smell of protection in acute and chronic diseases. International Journal of Molecular Sciences, 20, 634. https://doi.org/10.3390/ijms20030634

3. Bhatt, J., Bhat, A.R., Dhama, K., Amarpal, 2016. An overview of ozone therapy in equine – An emerging healthcare solution. J. Exp. Biol. Agric. Sci. 4, S203–S210.

4. Merhi, Z., Garg, B., Moseley-Larue, R., Moseley, A., Smith, A., Zhang, J., 2019. Ozone therapy: a potential therapeutic adjunct for improving female reproductive health. Med. Gas Res. https://doi.org/10.4103/2045-9912.260652.

5. Ousey, J. C., Kölling, M., Newton, R., Wright, M., & Allen, W. R. (2012). Uterine haemodynamics in young and aged pregnant mares measured using Doppler ultrasonography. Equine Veterinary Journal Supplement, 41, 15–21.



Im kave koorehpaz. Resident of theriogenology and obstetric in urmia university who interested in equine reproductive and gynecology medicine.

kave.koorehpaz@gmail.com

ORCID NO: 0000-0003-1968-9453