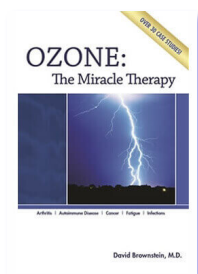


Learn more on Medical Ozone therapy by reading Ozone the Miracle Therapy by Dr. David Brownstein.



This book is available at DMXI or you can order it.

<https://drbrownstein.com/ozone-the-miracle-therapy-now-available.htm>

Internet links to medical ozone therapy shown below can get you started to learn more.

<https://www.ncbi.nlm.nih.gov/pubmed/?term=ozone+therapy+and+pain>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6178636/>

Med Gas Res. 2018 Jul-Sep; 8(3): 121–124.

Published online 2018 Sep 25. doi: [10.4103/2045-9912.241078](https://doi.org/10.4103/2045-9912.241078)

PMCID: PMC6178636

PMID: [30319768](https://pubmed.ncbi.nlm.nih.gov/30319768/)

Ozone therapy as a primary and sole treatment for acute bacterial infection: case report

Abstract

The world is facing a crisis of antibiotic resistance, which impacts every treating physician on the planet. Thousands of patients die yearly in the USA from infections that have failed to respond to anti-infectives. Alarms have been ringing about bacterial infection fatality resurgence, the end of the antibiotic era, a calamity in progress. Ozone therapy has been used in medicine since World War I. However, it is not patentable and has suffered from lack of private source funding for research sufficient to have it accepted by the mainstream. Basic science, both *in vivo* and *in vitro*, research has found it to have several effects including modulating the immune system, enhancing circulation, destroying microorganisms including bacteria and viruses, and enhancing oxygen delivery and consumption by the body. This report presents background basic ozone science and a case report of acute bacterial infection – tick bite cellulitis, which immediately responded to ozone therapy as the sole treatment, and which fully resolved within 24-48 hours. Ozone therapy could be considered as an adjunctive or alternative therapy for bacterial infection.

Keywords: ozone therapy, infection, antimicrobial, cellulitis, antibiotic resistance, immune modulation, oxygenation, reactive oxygen species

<https://www.ncbi.nlm.nih.gov/pubmed/31062104>

Curr Pain Headache Rep. 2019 May 6;23(6):41. doi: 10.1007/s11916-019-0776-y.

Ozone Therapy for Complex Regional Pain Syndrome: Review and Case Report.

Rowen RJ¹, Robins H².

<https://www.ncbi.nlm.nih.gov/pubmed/31228871>

Pain Pract. 2019 Jun 22. doi: 10.1111/papr.12812. [Epub ahead of print]

The Effect of Paravertebral Ozone Injection in the Treatment of Low Back Pain.

CONCLUSION:

Paravertebral O₃ /O₂ gas is a reliable and effective treatment for the treatment of lumbar disc herniation, radicular pain, and mechanical back pain due to low back pain.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4243224/>

Interv Neuroradiol. 2014 Oct; 20(5): 547–554.

Published online 2014 Oct 17. doi: [10.15274/INR-2014-10078](https://doi.org/10.15274/INR-2014-10078)

PMCID: PMC4243224

PMID: [25363257](https://pubmed.ncbi.nlm.nih.gov/25363257/)

Oxygen-Ozone Therapy for Herniated Lumbar Disc in Patients with Subacute Partial Motor Weakness Due to Nerve Root Compression

<https://www.sciencedirect.com/science/article/pii/S1319562X16000498>

Saudi Journal of Biological Sciences

Volume 25, Issue 4, May 2018, Pages 672-679 Review

Medical ozone therapy as a potential treatment modality for regeneration of damaged articular cartilage in osteoarthritis

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4984384/>

Interv Neuroradiol. 2016 Aug; 22(4): 466–472.

Published online 2016 Apr 11. doi: [10.1177/1591019916637356](https://doi.org/10.1177/1591019916637356)

PMCID: PMC4984384

PMID: [27066816](https://pubmed.ncbi.nlm.nih.gov/27066816/)

Herniated disks unchanged over time: Size reduced after oxygen–ozone therapy

Herniated disks unchanged over time: Size reduced after oxygen-ozone therapy.

of disk herniation secondary to dehydration is a much-debated topic in medicine. Some physicians wonder whether surgical removal of the extruded nucleus pulposus is really necessary when the spontaneous disappearance of a herniated lumbar disk is a well-known phenomenon. Unfortunately, without spontaneous regression, chronic pain leads to progressive

disability for which surgery seems to be the only solution. In recent years, several studies have demonstrated the utility of oxygen-ozone therapy in the treatment of disk herniation, resulting in disk shrinkage. This retrospective study evaluates the outcomes of a series of patients with a history of herniated disks neuroradiologically unchanged in size for over two years, treated with oxygen-ozone therapy at our center over the last 15 years. We treated 96 patients, 84 (87.5%) presenting low back pain complicated or not by chronic sciatica. No drug therapy had yielded significant benefits. A number of specialists had been consulted in two or more years resulting in several neuroradiological scans prior to the decision to undertake oxygen-ozone therapy. Our study documents how ozone therapy for slipped disks "unchanged over time" solved the problem, with disk disruption or a significant reduction in the size of the prolapsed disk material extruded into the spinal canal.

<https://www.ncbi.nlm.nih.gov/pubmed/25280029>
[Int J Immunopathol Pharmacol](#). 2014 Jul-Sep;27(3):379-89.

Ozone autohemotherapy induces long-term cerebral metabolic changes in multiple sclerosis patients.

<https://www.ncbi.nlm.nih.gov/pubmed/28594115>

[J Cell Physiol](#). 2018 Apr;233(4):2705-2714. doi: 10.1002/jcp.26044. Epub 2017 Jul 11.

Therapeutic relevance of ozone therapy in degenerative diseases: Focus on diabetes and spinal pain.

Therapeutic relevance of ozone therapy in degenerative diseases: Focus on diabetes and spinal pain.

Ozone, one of the most important air pollutants, is a triatomic molecule containing three atoms of oxygen that results in an unstable form due to its mesomeric structure. It has been well-known that ozone has potent ability to oxidize organic compounds and can induce respiratory irritation. Although ozone has deleterious effects, many therapeutic effects have also been suggested. Since last few decades, the therapeutic potential of ozone has gained much attention through its strong capacity to induce controlled and moderated oxidative stress when administered in precise therapeutic doses. A plethora of scientific evidence showed that the activation of hypoxia inducible factor-1 α (HIF-1 α), nuclear factor of activated T-cells (NFAT), nuclear factor-erythroid 2-related factor 2-antioxidant response element (Nrf2-ARE), and activated protein-1 (AP-1) pathways are the main molecular mechanisms underlying the therapeutic effects of ozone therapy. Activation of these molecular pathways leads to up-regulation of endogenous antioxidant systems, activation of immune functions as well as suppression of inflammatory processes, which is important for correcting oxidative stress in diabetes and spinal pain. The present study intended to review critically the available scientific evidence concerning the beneficial properties of ozone therapy for treatment of diabetic complications and spinal pain. It finds benefit for integrating the therapy with ozone into pharmacological procedures, instead of a substitutive or additional option to therapy.

<https://www.ncbi.nlm.nih.gov/pubmed/28864782>

[Biosci Rep](#). 2017 Nov 9;37(6). pii: BSR20170658. doi: 10.1042/BSR20170658. Print 2017 Dec 22.

Ozone oil promotes wound healing by increasing the migration of fibroblasts via PI3K/Akt/mTOR signaling pathway.

Ozone oil promotes wound healing by increasing the migration of fibroblasts via PI3K/Akt/mTOR signaling pathway.

Skin injury affects millions of people via the uncontrolled inflammation and infection. Many cellular components including fibroblasts and signaling pathways such as transforming growth factor- β (TGF- β) were activated to facilitate the wound healing to repair injured tissues. C57BL/6 female mice were divided into control and ozone oil treated groups. Excisional wounds were made on the dorsal skin and the fibroblasts were isolated from granulation tissues. The skin injured mouse model revealed that ozone oil could significantly decrease the wound area and accelerate wound healing compared with control group. QPCR and Western blotting assays showed that ozone oil up-regulated *collagen I*, α -SMA, and TGF- β 1 mRNA and protein levels in fibroblasts. Wound healing assay demonstrated that ozone oil could increase the migration of fibroblasts. Western blotting assay demonstrated that ozone oil increased the epithelial-mesenchymal transition (EMT) process in fibroblasts via up-regulating fibronectin, vimentin, N-cadherin, MMP-2, MMP-9, insulin-like growth factor binding protein (IGFBP)-3, IGFBP5, and IGFBP6, and decreasing epithelial protein E-cadherin and cellular senescence marker p16 expression. Mechanistically, Western blotting assay revealed that ozone oil increased the phosphorylation of PI3K, Akt, and mTOR to regulate the EMT process, while inhibition of PI3K reversed this effect of ozone oil. At last, the results from Cytometric Bead Array (CBA) demonstrated ozoneoil significantly decreased the inflammation in fibroblasts. Our results demonstrated that ozone oil facilitated the wound healing via increasing fibroblast migration and EMT process via PI3K/Akt/mTOR signaling pathway *in vivo* and *in vitro*. The cellular and molecular mechanisms we found here may provide new therapeutic targets for the treatment of skin injury.

<https://clinmedjournals.org/articles/ijp/international-journal-of-physiatry-ijp-2-007.php?jid=ijp>

**International Journal of
Physiatry** ISSN: 2572-4215

REVIEW ARTICLE | VOLUME 2, ISSUE 1 | OPEN ACCESS DOI: 10.23937/2572-4215.1510007

**New Therapeutic Approach in Rheumatoid Arthritis: Ozone
Gulnur Tasci Bozbas* and Omer Faruk Sendur**

<https://www.ncbi.nlm.nih.gov/pubmed/29868796>

Pain Med. 2018 May 30. doi: 10.1093/pm/pny066. [Epub ahead of print]

Comparison of Ultrasound-Guided Local Ozone (O2-O3) Injection vs Corticosteroid Injection in the Treatment of Chronic Plantar Fasciitis: A Randomized Clinical Trial.

Comparison of Ultrasound-Guided Local Ozone (O2-O3) Injection vs Corticosteroid Injection in the Treatment of Chronic Plantar Fasciitis: A Randomized Clinical Trial.

OBJECTIVE:

Plantar fasciitis (PF) is one of the most common causes of heel pain. The affected area is often close to the attachment of plantar fascia to calcaneus bone. The purpose of this study was to compare the effects of ozone (O2-O3) injection to corticosteroid injection under ultrasound guidance for the treatment of chronic PF.

DESIGN:

Randomized clinical trial. SETTING: Academic University and Neuromusculoskeletal Research Center.

SUBJECTS:

Thirty patients with chronic PF.

METHODS:

The patients were randomly divided into two groups receiving methylprednisolone (15 subjects) vs ozone (O2-O3; 15 subjects). The following outcome measures were assessed before injection and then two weeks and 12 weeks after the injection in each group; morning and daily pain via visual analog scale, daily life and exercise activities via the Foot and Ankle Ability Measure, and plantar fascia thickness at insertion and 1 cm distal to its insertion into the calcaneus via ultrasound imaging.

RESULTS:

Intragroup changes showed significant improvement in pain, functional parameters, and sonographic findings in both groups ($P < 0.05$). Pain reduction (both daily and morning) and daily activity improvement were better in the corticosteroid group two weeks after injection; however, at 12 weeks, the ozone (O2-O3) group had significantly more improvement ($P = 0.003$, $P = 0.001$, and $P = 0.017$, respectively).

CONCLUSIONS:

Both methods were effective in the treatment of chronic PF. Steroid injection provided a more rapid and short-term therapeutic effect. However, ozone (O2-O3) injection led to a slow and longer-lasting treatment outcome. Ozone (O2-O3) injection can be an effective treatment, with slow onset and a longer durability in the treatment of chronic PF.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5674660/>

Med Gas Res. 2017 Jul-Sep; 7(3): 212–219.

Published online 2017 Oct 17. doi: [10.4103/2045-9912.215752](https://doi.org/10.4103/2045-9912.215752)

PMCID: PMC5674660

Ozone therapy: an overview of pharmacodynamics, current research, and clinical utility

Abstract

The use of ozone (O₃) gas as a therapy in alternative medicine has attracted skepticism due to its unstable molecular structure. However, copious volumes of research have provided evidence that O₃'s dynamic resonance structures facilitate physiological interactions useful in treating a myriad of pathologies. Specifically, O₃ therapy induces moderate oxidative stress when interacting with lipids. This interaction increases endogenous production of antioxidants, local perfusion, and oxygen delivery, as well as enhances immune responses. We have conducted a comprehensive review of O₃ therapy, investigating its contraindications, routes and concentrations of administration, mechanisms of action, disinfectant properties in various microorganisms, and its medicinal use in different pathologies. We explore the therapeutic value of O₃ in pathologies of the cardiovascular system, gastrointestinal tract, genitourinary system, central nervous system, head and neck, musculoskeletal, subcutaneous tissue, and peripheral vascular disease. Despite compelling evidence, further studies are essential to mark it as a viable and quintessential treatment option in medicine.