

3rd International Conference on Surgery and Anesthesia

November 17-19, 2014 Chicago, USA

Ozone therapy

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Introduction: Ozone (O₃) gas discovered in the mid-nineteenth century is a molecule consisting of three atoms of oxygen in a dynamically unstable structure due to the presence of mesomeric states. Ozone is a highly soluble gas with great oxidizing activity. In contact with biological fluids ozone forms lipid oxidation products and reactive oxygen species. Ozone therapy has been utilized and heavily studied for more than a century. Its effects are proven, consistent, safe and with minimal and preventable side effects. Ozone is used to treat many painful syndromes affecting the joint muscles and tendons even when peripheral neurological impairment is present. Its pain killing mechanism is thought to be based on stimulation of the anti-nociceptive apparatus mediated by endogenous opioids and serotonin thereby raising the pain threshold. In addition, the marked anti-inflammatory properties of ozone reduce edema, joint swelling and compression on nerve root structures. Ozone favours tissue hyper-oxygenation following increased vascularization due to neoangiogenesis improving local tissue trophism and the inhibitory capacity of inflammatory metabolites. Diseases treated by ozone are infected wounds, circulatory disorders, Diabetic complications, geriatric conditions, macular degeneration, viral diseases, rheumatism/arthritis, cancer, SARS and AIDS.

Mechanism of Action: Inactivation of bacteria, viruses, fungi, yeast and protozoa: Ozone therapy disrupts the integrity of the bacterial cell envelope through oxidation of the phospholipids and lipoproteins. In fungi, O₃ inhibits cell growth at certain stages. With viruses, the O₃ damages the viral capsid and upsets the reproductive cycle by disrupting the virus-to-cell contact with peroxidation. Stimulation of oxygen metabolism: Ozone therapy causes an increase in the red blood cell glycolysis rate. This leads to the stimulation of 2,3-diphosphoglycerate which leads to an increase in the amount of oxygen released to the tissues. Activation of the immune system: Ozone increases the production of interferon and tumor necrosis factor and interleukin-2.