



## OZONE THERAPY- AN OVERVIEW

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### Abstract:

ozone therapy involves the treatment of variety of diseases ,by the use of ozone. The use of ozone therapy is advocated as a form of alternative medicine. Ozone therapy is a 3-decade-old alternative medicine. Ozone therapy is non-conventional therapy which is used from several years in the treatment of diseases like cancer ,AIDS, ischemic disorders ,dentistry etc.

**Key words:** Ozone, Ozone therapy ,dentistry ,diseases .

### Introduction:

“Ozone” is the elemental form of oxygen occurring naturally in the earth’s atmosphere, having molecular formula  $O_3$  and present into stratosphere. Ozone therapy can be defined as a versatile bio-oxidative therapy in which oxygen/ozone is administered via gas or dissolved in water or oil base to obtained therapeutic benefits.<sup>1</sup>

Ozone therapy is a rinsing ,washing, sterilization and direct application process that uses ozone. Medical ozone is the mixture of pure ozone and pure oxygen. C.D Schonbein, the German chemist first discovered ozone in 1840 and the first medical application was observed in 1870 by Dr.C.Lender<sup>2</sup>. Now a days medical literature shows interest in ozone therapy because thousands of doctors throughout the world ,obtained positive results from this technique.<sup>3</sup>

Ozone therapy is successfully used in the treatment of many diseases like cancer, AIDS, diabetes and in various skin diseases. It is widely used in dentistry.

### Ozone therapy- in dental treatments

The use of ozone has been proposed in dentistry due to its disinfectant ,antimicrobial ,biocompatibility and healing properties. Ozone in dentistry has three basic forms of applications – ozonated water , ozonated olive oil, and oxygen /ozone gas.<sup>4</sup> Interest in ozone use in dentistry is due to the infectious diseases associated with the oral cavity. Ozone therapy can be used for the treatment of early carious lesions ,root canals also used for sterilization of cavities. Ozone therapy can be used to kill bacteria present in carious lesions, without any pain and anaesthetic<sup>5</sup>.

### Ozone therapy -in lower limb ulceration

Ozone is a very effective therapeutic agent in many pathological conditions . The development of

chronic ulcers is often on the basis of microcirculation and micro-angiopathy . Multifunctional ozone effect in the treatment of peptic ulcer is revealed first of all in its anti-inflammatory and anti- helicobacterial action. It results in accelerating the epithelization process , infiltrate elimination in mucous membrane within a shorter period a compare the traditional therapy<sup>6</sup> .

### Chronic Hepatitis and ozone therapy

Ozone therapy as a mono-therapy can be used in the treatment of chronic hepatitis .Ozone antiviral property plays an important role in the treatment of infectious hepatitis<sup>6</sup> . Hepatitis C (HCV) is a global disease ,ozone because of its special biological properties has theoretical and practical attributes to make it a potent HCV inactivator .

### Ozone therapy in female infertility

: Infertility is one of the most serious social as well as medical problem of the world. About 8-10 % couples are classified as infertile.

Ozone has the antiviral ,antibacterial, and anti fungal properties ,it eliminates inflammation and hence facilitates the easy passage of sperm through fallopian tubes and hence acts on infertility of inflammatory origin.

### Ozone therapy in breast cancer

Breast cancer has become the most common fatal disease in the women . Cancer is considered to be a free radical pathology.

The quantity of free radical changes according to the stage of ancological development. It cannot be excluded that severe toxic events that occur at the terminal stages of the disease are due to accumulation of hydroxidative radicals in organisms . Ozone therapy helps in the complex treatment of breast cancer ,it improves the

immunological parameters and increase the activity of antioxidant defence system.

### **Ozone therapy in surgery**

Ozone due to its powerful bactericidal properties, concerning with aerobic and anaerobic microorganisms, it is widely used in surgery. Ozone therapy can be used during operation and in post operative period.

Ozone therapy during operation: Intraoperative sanitation of abdominal cavity can be done with the help of ozonated physiological saline.

Ozone therapy in postoperative period: peritoneal lavage with ozonated physiological saline.

### **Ozone therapy in Bronchial Asthma**

Ozone therapy is useful in asthma because of its immunomodulatory and oxidative stress regulation properties<sup>7</sup>. Ozone immune modulating properties are of primary importance in the treatment of chronic bronchitis. The efficiency of ozone therapy can be explained by the ability of ozone to influence various aspects of pathological process. The treatment of bronchial asthma can be done by

-Activation of the immune system

-Elimination of viral and bacterial infections ,bronchoconstriction,allergic reactions and hypoxia.

### **Ozone therapy in the treatment of bone infections**

In case of bone infection ,general treatment was performed by using ozone rectal application and local ozone treatment and ozonized oil. In the treatment of infected bone ozone therapy directly applied into the septic bone as a unique treatment or in combination with antibioticotherapy, surgery etc .

### **Effectiveness of ozone therapy in Diabetes Mellitus**

: One of the effective method for the treatment of diabetes mellitus is an ozone therapy. Penetration of cellular membrane for glucose has been improved by ozone. It can be done by stimulating pentose-phosphate pathway and aerobic glycolysis ,which are inhibited in case of diabetes mellitus . Ozone therapy proved to be effective in the treatment of complicated forms of diabetes mellitus.

### **Ozone therapy in tumor – oxygenation**

: Ozone therapy is a non-conventional form of medicine that has been used successfully in the treatment of ischemic disorders. Tumor hypoxia is an adverse factor for radiotherapy and chemotherapy<sup>8</sup>.

In all serious disease states we find a concomitant low oxygen states .Low oxygen in the body tissue is a sure indicator for disease i.e. Hypoxia means lack of oxygen in the tissues ,it considered as the fundamental cause of almost all degenerative disease. The ozone therapy is considered to be more powerful ,because ozone has more oxidizing power ,and hence shows better results.

### **Ozone therapy in Dermatology**

Ozone therapy in the form of gas bath is an important aspects in the treatment of many skin diseases . Ozone therapy can be used in the treatment of some forms of neurodermititis, via

-Ozonized vegetable oil

-Aeration with ozone /oxygen mixture in a plastic bag.

-Intravenous infusions of ozonized physiological saline.

Ozone therapy can be used successfully in the treatment of variuos skin diseases like Neurodermititis Eczema, Acneiform Eruption, Furunculosis pyodermia , Herpes, Psoriasis, Mycosis. The use of ozone therapy in the management of patients with various inflammatory skin diseases makes it possible to delimit the inflammation and to improve trophical process.

### **Ozone treatment in food industries**

Due to oxidizing and sanitizing property of ozone , it ts capable to kill numerous microorganisms by oxidizing their cell membranes. In food industries the ozonated water plays an important role ,to reduce the microbial loads .Ozonated water may actually reduced about 90%of total bacteria in some vegetables .this treatment also reduce the fungal decay.

### **Ozone in water treatment**

In the municipal water treatment disinfection by ozone ,chlorine ,or ultraviolet radiation constitutes the final step. Drinking water treatment can be done by ozone because of its oxidative strength. Ozone will effectively destroy bacteria and also inactivate viruses more rapidly as compare to other chemical disinfectant.

Ozone has ability to destroy toxic or noxious industrial impurities. Ozone inactivate bacterial contaminants in effluents ,these properties of made it an attractive alternative to chlorination<sup>9</sup>.

### Conclusion

ozone is the treatment of 21<sup>st</sup> century . ozone therapy is the most popular technique, used to cure many diseases. Due to it's antiviral, antibacterial , property it is widely used in water treatment plants. Ozone used in many processes like disinfection and purification of drinking water ,disinfection of swimming pools ,it can be used in air conditioning systems . It is also used as food preservative.

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