
ABOZ
Associação Brasileira de Ozonioterapia
Ozone Therapy
News
Pain & Vascular
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Ozone Therapy
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CAMERA DEI DEPUTATI N. 5850

PROPOSTA DI LEGGE

d'iniziativa del deputato BELLOTTI

Disposizioni in materia di somministrazione di miscele di ossigeno a scopo terapeutico

Presentata il 17 maggio 2005

ONOREVOLI COLLEGHI ! — I progressi della scienza medica, che ampliano i suoi confini grazie allo studio e all'intuizione dei ricercatori, nell'interesse della salute dei pazienti che si affidano con fiducia alla loro esperienza e all'approfondimento degli effetti delle cure e dei ritrovati sia moderni, sia antichi, rivisti all'esame critico delle attuali conoscenze tecniche, al di là, ovviamente, delle cosiddette « medicine alternative » che si basano su principi filosofici o sull'efficacia dell'azione personale dell'individuo che pratica la « cura » (ne siano esempio la chiroterapia, i massaggi *shiatsu*, eccetera), hanno posto in evidenza gli effetti e l'oggettiva efficacia scientifica dell'applicazione dell'ossigeno nelle sue molteplici e diverse forme molecolari, variamente mescolato nella prospettiva delle altre terapie ossidative già contemplate nella pratica medica ufficiale (*Laser*, RXterapia, ossigeno iperbarico). A quanto esposto si aggiunge l'oggettiva constatazione del proliferare di studi medici che, utilizzando apparecchiature che trasformano l'ossigeno medicale – 02 – nelle varie forme molecolari, hanno portato ai noti, evidenti successi e notevoli risultati nelle più disparate patologie.

Evidenti successi che non possono essere smentiti da aneddotici episodi dovuti alla mala pratica che la presente proposta di legge si prefigge di impedire; infatti, ciò che manca è una normativa che disciplini la materia, fissando da chi ed i limiti entro i quali sia lecito applicare queste terapie *in corpore vili*, impedendo gli abusi. Pertanto, la proposta di legge, in attuazione dei princìpi stabiliti dall'articolo 32 della Costituzione e del decreto legislativo 30 dicembre 1992, n. 502, e successive modificazioni, stabilisce adeguate norme per la somministrazione di miscele di ossigeno a scopo terapeutico.

Ozone in Pain and Neurology

Pain can be considered a subjective feeling of discomfort

Usually it represents a valid tool to inform the central nervous system that some tissues elsewhere in the body are affected by an alteration of the physiological environment (release of mediators during inflammation)

In other condition in which any apparent alteration is detectable it reflects a psychosomatic situation bind to the unbalancing of the endorphin system or to the improper activation of the spinal receptors involved in the transmission of the painful stimulus (see limb ghost)

In Clinical Pharmacology the most used drugs against pain could be the following:

NSAID – They block the metabolism of the arachidonic acid reducing the formation of pro-inflammatory substances and mediators like PG and others bio-molecules !!

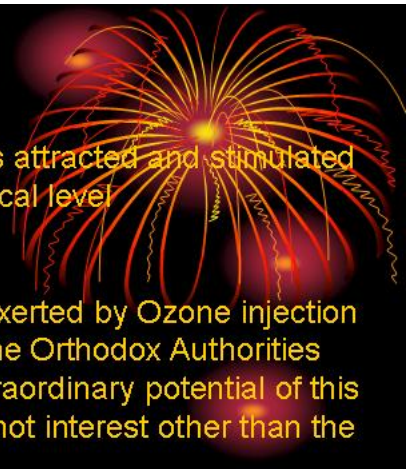
Cortisones and Derivatives – They are potent inhibitors of the immunitary response !!!

Morphine – The most potent and less used except in terminal cancer patients for the well-known reasons !!!!

Other Analgesic Techniques

Anesthetic Blocks

Surgical Blocks

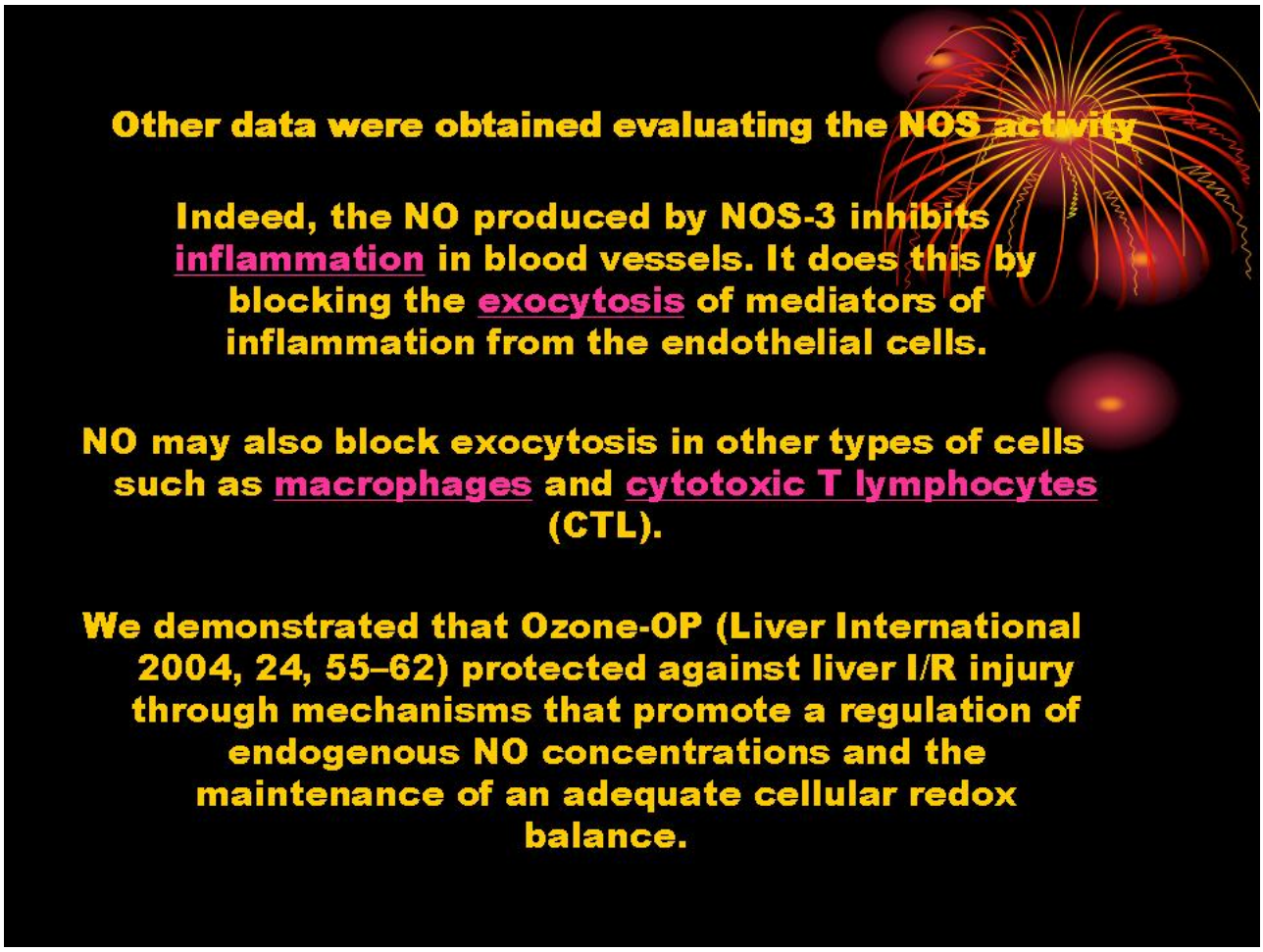


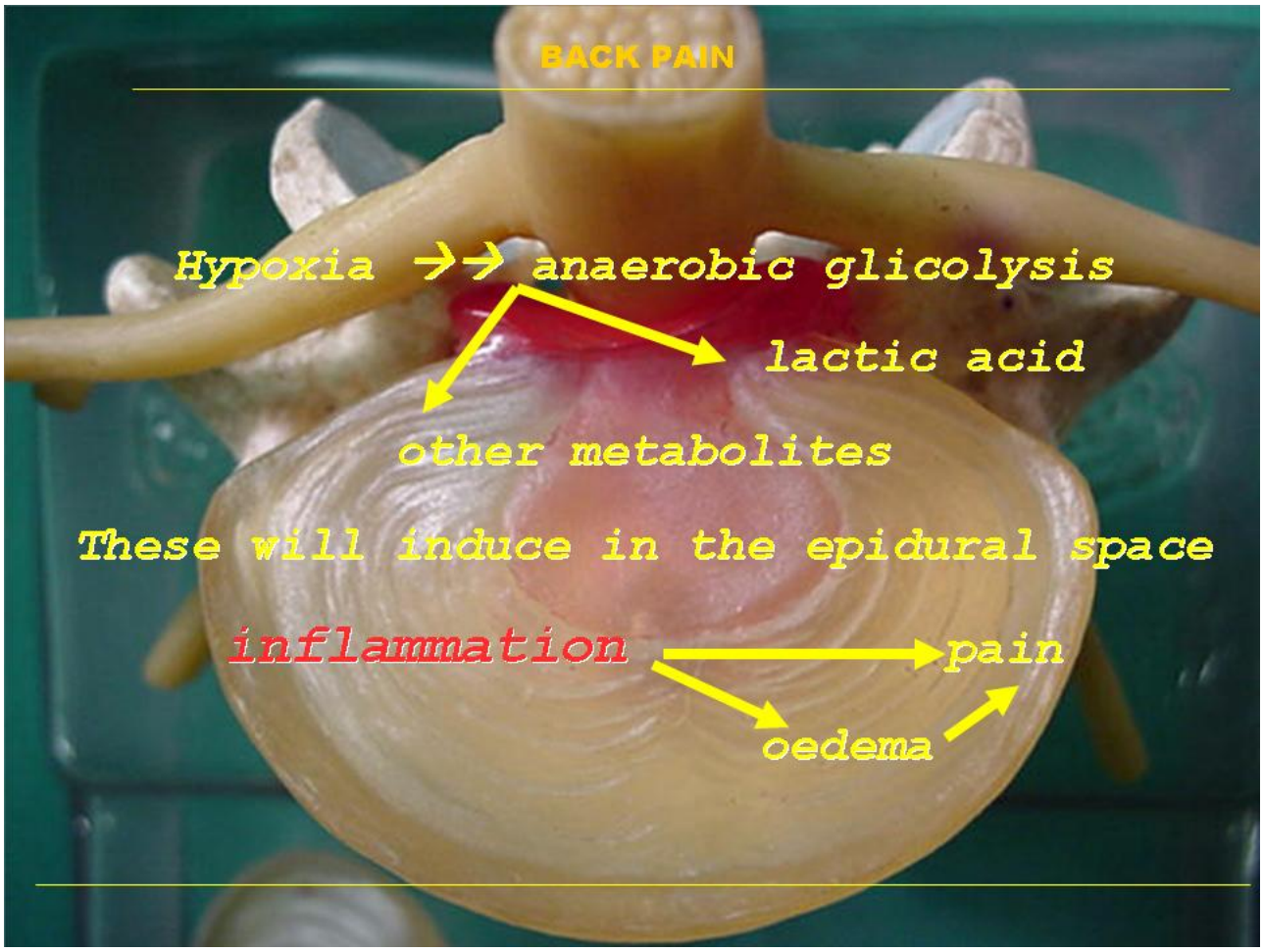
When I started my experience with Ozone Therapy I was attracted and stimulated as scientist by the reported data at clinical level

Really at the beginning were emphasized other effects exerted by Ozone injection perhaps because it would be very difficult explain to the Orthodox Authorities dealing on the Drug Development and Marketing the extraordinary potential of this gas .. and perhaps because this poor therapy really do not interest other than the vulgar speculation against it

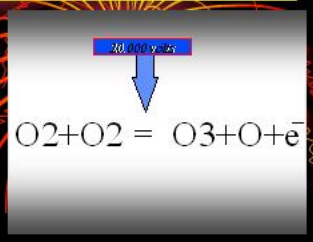
After my first approach at clinical level I was impressed as pharmacologist by the potent anti-inflammatory effect of ozone more in the case of sport traumatism: how we could explain the reduction of pain and swelling of a traumatized articulation without the use of NSAID or Cortisones?

The data obtained with our basic studies showed surprising effects of ozone that are now ready to be accepted also at the maximum scientific council

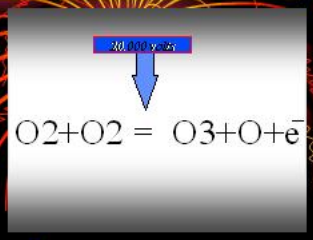

Other data were obtained evaluating the NOS activity
Indeed, the NO produced by NOS-3 inhibits inflammation in blood vessels. It does this by blocking the exocytosis of mediators of inflammation from the endothelial cells.
NO may also block exocytosis in other types of cells such as macrophages and cytotoxic T lymphocytes (CTL).
We demonstrated that Ozone-OP (Liver International 2004, 24, 55–62) protected against liver I/R injury through mechanisms that promote a regulation of endogenous NO concentrations and the maintenance of an adequate cellular redox balance.


BACK PAIN
Hypoxia →→ anaerobic glicolysis
lactic acid
other metabolites
These will induce in the epidural space
inflammation
pain
oedema

Ozone Inhibits



- ***synthesis of prostaglandins***
- ***liberation of bradikinines and pain inducing products***
- ***secretion of proteinases from macrophages and neutrophiles***



Ozone

Strongly stimulating the local production of antioxidant enzymes

neutralizes endogenous ROS

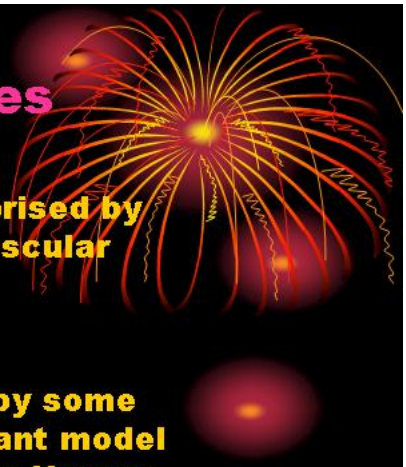
Back Pain - Disk Conflict

The best way to inject ozone is the safest way

.... Ozone always works ...

... It is only a question of time ... and trace elements balancement ..

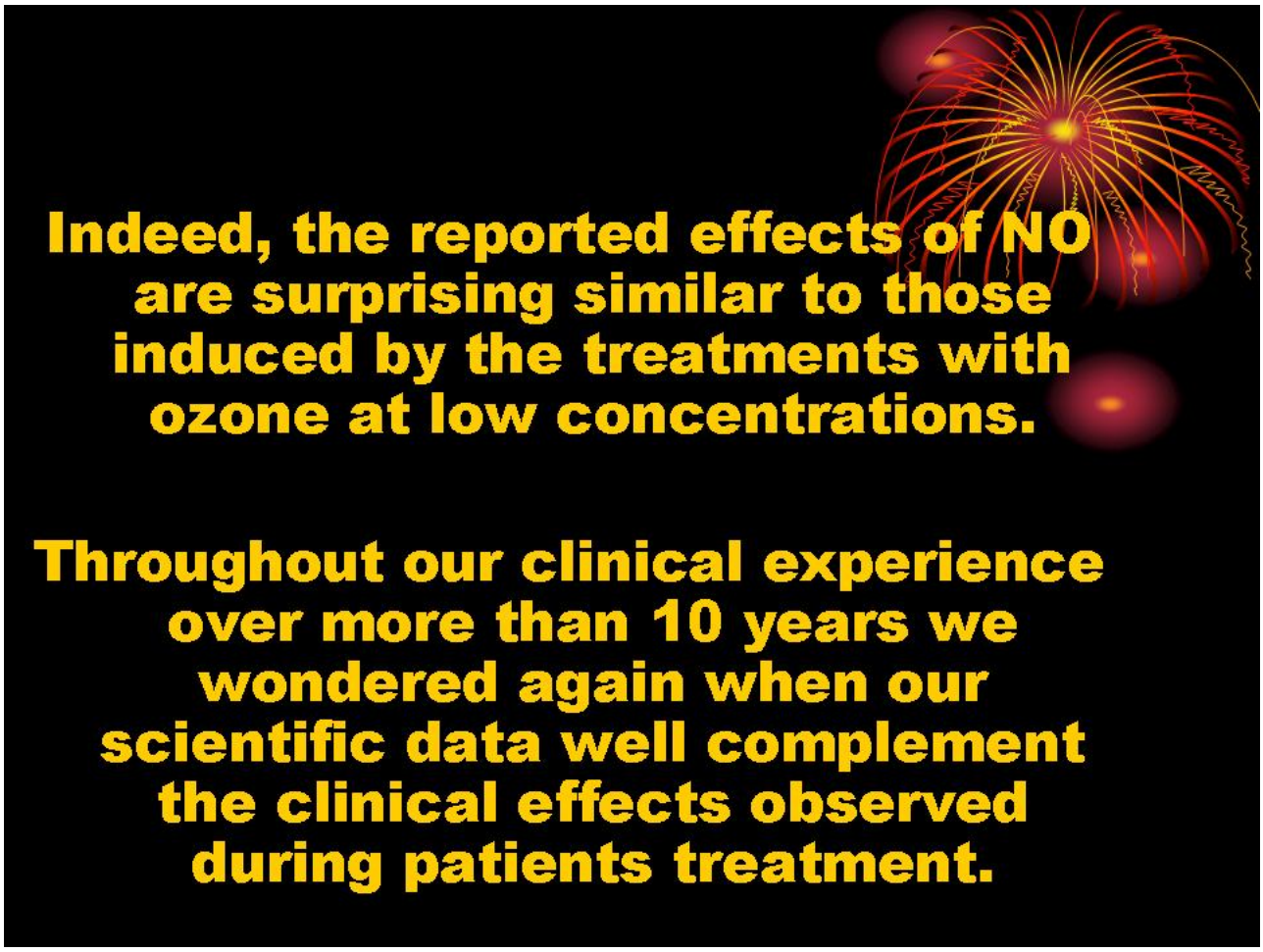
Ozone in Vascular Diseases



During our long experiences we were surprised by other positive effects of ozone on the vascular system

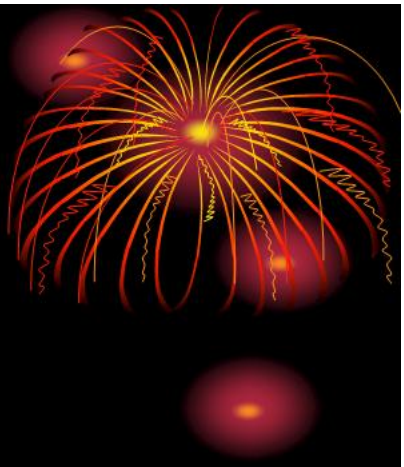
Several data have already been reported by some Pioneers like Dr Matassi who in a very elegant model explained the positive effects of Major Auto Haemo on the obliterant arteriopathy

Recent data explain also at the microcirculation system the very positive effect of ozone announcing some peculiar effect of low ozone doses on the endothelium function (NOS modulation)


Indeed, the reported effects of NO are surprising similar to those induced by the treatments with ozone at low concentrations.
Throughout our clinical experience over more than 10 years we wondered again when our scientific data well complement the clinical effects observed during patients treatment.

NO on Blood Flow

NO relaxes the smooth muscle in the walls of the arterioles. At each systole, the endothelial cells that line the blood vessels release a puff of NO. This diffuses into the underlying smooth muscle cells causing them to relax and thus permit the surge of blood to pass through easily.
Mice whose genes for the NO synthase found in endothelial cells (eNOS) has been "knocked out" suffer from hypertension.
Nitroglycerine, which is often prescribed to reduce the pain of angina, does so by generating nitric oxide, which relaxes the walls of the coronary arteries and arterioles.
Three of the pioneers in working out the biological roles of NO shared a Nobel Prize in 1998 for their discoveries. The award to one of them, Ferid Murad, honoured his discovery that nitroglycerine works by releasing NO. This seems particularly appropriate because Alfred Nobel's fortune came from his invention of making dynamite from nitroglycerine! NO also inhibits the aggregation of platelets and thus keeps inappropriate clotting from interfering with blood flow.



Moreover, the following data exposed by Dr Viebahn at the last International Congress of Strasbourg, reinforce the scientific hypotheses of the surprising positive effects of ozone in the venous and arterial circulation.

Pharmacological Mechanisms

Under this aspect the mechanisms of action found in the therapeutical use of ozone as well as in animal and cell models will be discussed in a new context.

In ozone therapy , ozonolysis with the production of (hydroxy-) hydroperoxides, is applied for the specific activation of cellular metabolism , this involving red blood cells and immunocompetent cells for the most part.

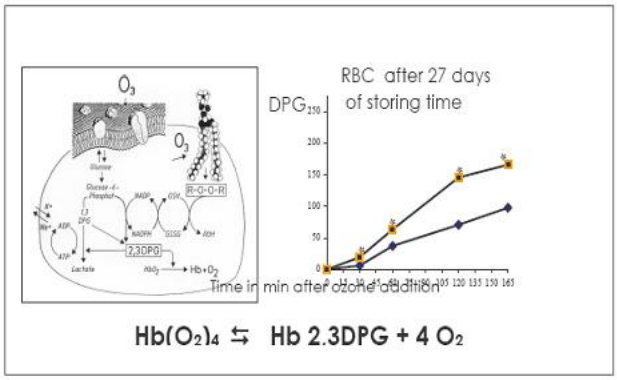


Figure 3. Improved oxygen availability via activation of the red blood cell metabolism, an increase in 2,3-DPG and improved oxygen release, here in stored blood [7-8].

This results in:

5. an improved availability of oxygen via the red blood cells, and a consequent regulation of hypoxia, see figure 3 and 5.
6. a regulation of biological antioxidants such as glucose-6-phosphate-dehydrogenase G-6-PDH , glutathion-peroxidase GSH-Px, glutathion-reductase GSH-red, superoxidedismutase SOD….., figure 4.
7. a bioregulation of angiogenesis resulting beside other factors from the improved availability of oxygen (fig. 5) and
8. an activation of immunocompetent cells inducing an immunomodulation shown in figure 6.

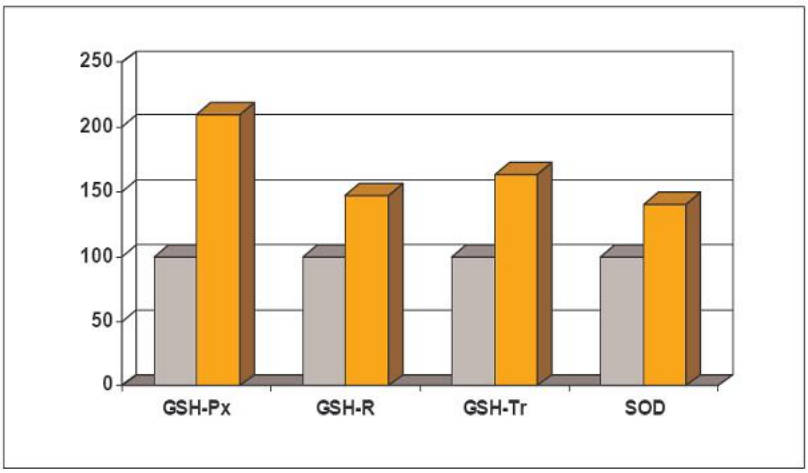


Figure 4. Ozone regulates the biological antioxidant system by activating the antioxydative enzymes GSH-Px: Glutathionperoxidase, GSH-R: Glutathionreduktase, GSH-Tr: Glutathiontransferase, SOD: Superoxiddismutase [3-5]

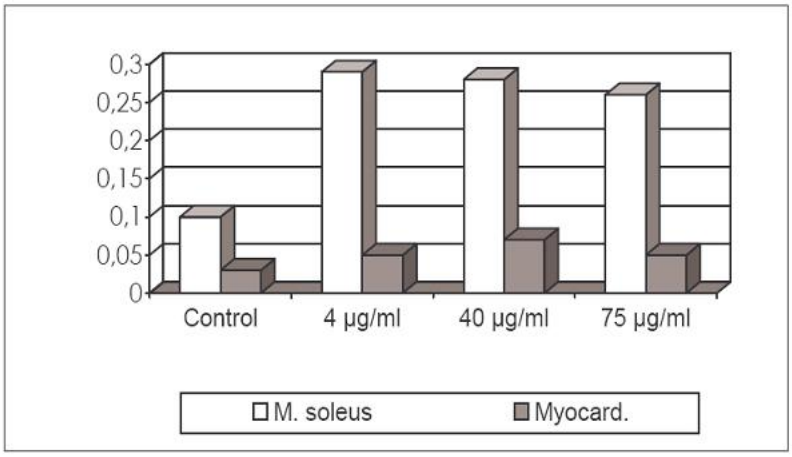


Figure 5. Induction of angiogenesis and regulation by low dose ozone application in an animal model: number of capillaries per muscle fiber in musculus soleus and myocard [2]

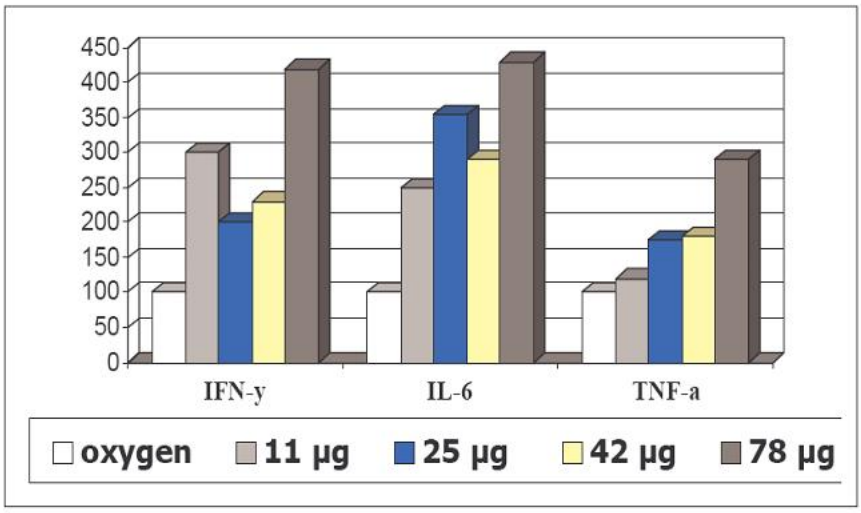


Figure 6. Immunoactivation by ozone depending on ozone concentration [3-5]

Since we know from Léon et al. [1,9,13] about the protective mechanism of ozone against hepatocellular damage by free radicals induced either by tetrachlorocarbon CCl_4, chemotherapeutics or by hypoxemia / reperfusion, one basic mechanism of ozone seems to take the key position: the activation of antioxidative enzymes by the low dosage ozone concept thus improving of the antioxidative capacity of the cells.An increase of superoxide dismutase SOD, glutathion GSH and Glucose-6-phophate dehydrogenase G-6PDH in figure 7 demonstrates this key role impressively.

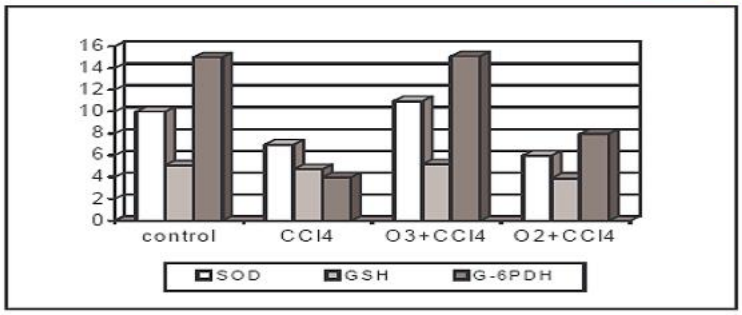


Figure 7. Protection against hepatocellular damage by free radicals induced by CCl_4. Preventive ozone administration in the form of rectal insufflations, daily during 15 days before CCl_4 poisoning. SOD, GSH and G-6PDH show even an increase as compared to the control group whereas the tremendous decrease in SOD, GSH and G-6PDH of the "CCl_4" and the "O_2 + CCl_4" group is a sign of the cell damage by a radical chain reaction. [9]

The good results in the treatment of diabetic foot in type 2 diabetes, one of the classical indications of medical ozone, can be interpreted through this mechanism as well.
The four metabolic dysfunctions in glycose metabolism discussed today as having been implicated in the glucose mediated vascular damage seem to reflect one single hyperglycaemia induced process: the overproduction of superoxide radicals by the mitochondrial electron transport chain [6].
On this fundamental basis Léon et al. 2005 [10] have presented a preclinical type 2 diabetes study as well as a clinical study to show that ozone treatment in the form of rectal insufflation is able to regulate the pathophysiological pathways of type 2 diabetes, obviously by it´s capacity of activating the antioxidative enzymes such as SOD, scavenging excessive superoxide radicals and regulating the oxidants/antioxidants balance of the biological system.

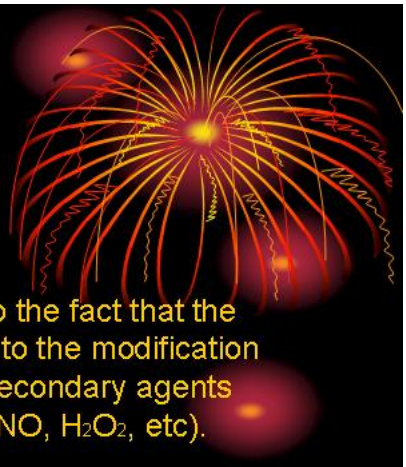
Indications

On the basis of these pharmacological effects, the complementary use of medical ozone in the following classical indications can be cited:

- Angiopathia, diabetic angiopathia in particular,
- chronic virus diseases such as hepatis B and hepatitis C,
- the effective support of malignant conditions,protective action against free radicals, produced by radiation and chemotherapy.

Main Indications of Medical Ozone As a complementary concept	Underlying Mechanisms of Action
External ulcers and skin lesions	Disinfection Wound cleansing Improved wound healing
Arterial circulatory disorders, angiopathia	Activation of RBC metabolism with an improvement of oxygen release Activation of ROS (reactive oxygen species) and radical scavengers
Immunodeficiency and immunodysbalance eg • Chronic forms of hepatitis B and C • Supportive therapy in cancer patients • Supportive therapy in rheumatoid arthritis	Activation of immunocompetent cells with release of cytokins such as interferons and interleukins Modulation of the immune system Increase of antioxidative capacity by activation of biological antioxidants
Inflammatory conditions such as • Knee arthrosis • Gonarthrosis • Traumatic knee disorders	Antiinflammatory effect • Activation of antioxidative enzymes as radical scavengers • Activation of immunocompetent and cartilage cells with release of TGF-β
Dental medicine • Following tooth extraction • Buccal infections (eg candida) • Aphthae • Parodontosis	Disinfection Wound cleansing Improved wound healing

Table 1. Main indications of ozone therapy and the underlying pharmacological mechanisms



General Remark

Ozone could be considered as a pro-drug due to the fact that the biological effect induced must be ascribed mainly to the modification of the micro cellular environment and to some secondary agents derived from its biochemical transformations (NO, H_2O_2, etc).

For this reason, the protocols discussed below must be intended as an indicative way of administration taking into account the peculiar response of each patient.

Usually, the result shows a wide variability mainly for the following reasons:

- Temporal occurrence of the traumatic or degenerative disorders: as soon as the treatment is started after the onset of the pathology, as soon and stable will be the therapeutic effect;
- Concomitant intake of drugs: neurological, psychiatric or antidepressant drugs reduce the efficacy of the ozone treatment;
- Age, sex and general status of the patient: usually young patient and female are good responder;
- Nutritional factors: the reduction of some trace elements due to diet abnormality could delay the onset of the benefit from ozone treatment. Particularly, any reduction of mineral (Cu, Zn, Mn, Se mainly) and vitamins (C, E, B1, B6 mainly) must be corrected in the best appropriate way;
- Encourage the patients to modify any deviation from a good life style: suggest weak daily walking, weight reduction when needed, weak sport activity mainly addressed to the best postural equilibrium, reduce alcohol and smoke, balanced diet, drug intake reduced to the absolute request of concomitant pathologies (diabetes, hypertension, etc.);
- Deep and detailed anamnesis and evaluation of the patient status. Familiarity, allergy and clinical history of any past and present trauma;

Moreover, the following point must be taken into account:

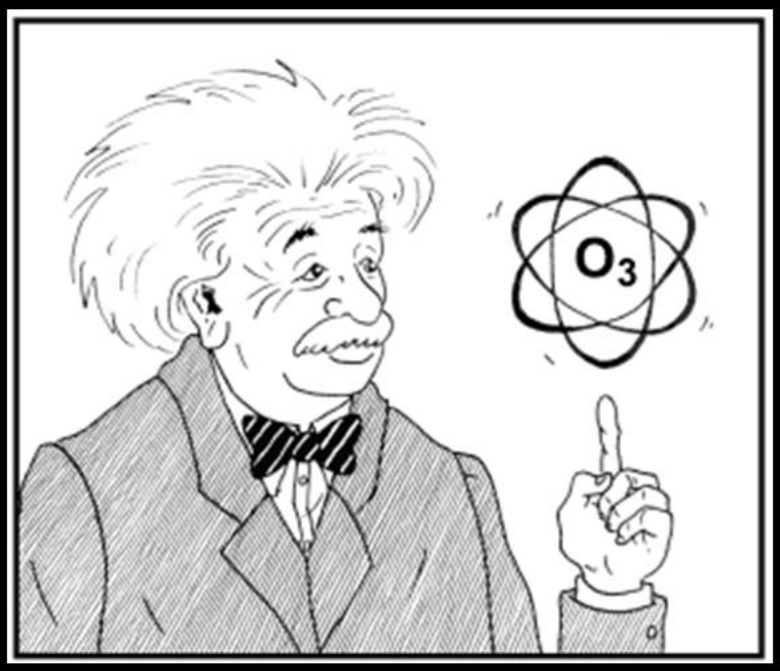
• Also if present a rapid onset of wellbeing after the first ozone treatments, inform the patients that this apparent wellbeing could vary during the session and usually during the treatments mostly at the end of the cycle (normally 12-15 sessions) a recrudescence of the pain or symptoms could be usual also if the duration of the crisis is shorter in time if compared with the previous state;

• In the case of apparent no effect of ozone treatment after the first sessions, encourage the patient and inform him in detail about the ozone mechanism: indeed ozone is a conditioning agent and the response will follow the reaching of the anatomical, functional, biochemical equilibrium referred to the peculiar pathology. Ozone is not exclusively a symptomatic agent and mainly its action is etiologic;

• Stimulate the patients to verify any collateral sign not referred to the main signs indicated: e.g. the quality of sleep, the presence or the absence of tiredness, the quality of life by a general point of view. Usually the patients report a wellbeing often not correlated to the main referred problem;

• Ask to the patient or to the familiars mainly in touch with him/her any impression positive or negative compared to the previous state;

• Evaluate the status of the skin and of the cutaneous aspects: hair, nail, general aesthetics;



Somebody still ask ..

It will be or not?

Thank You