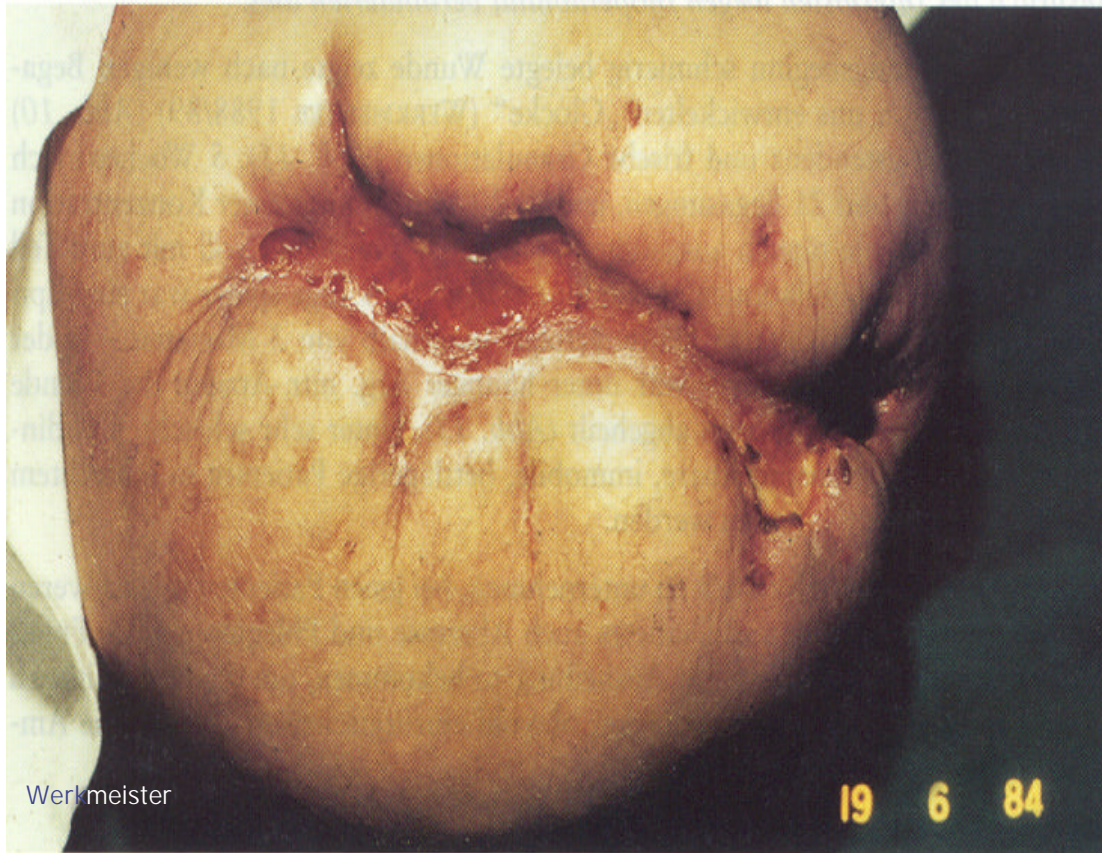


..\Janus.avi

Milestones of Medical Ozone

Renate Viebahn-Hänsler, Iffezheim

Milestones of Medical Ozone Ozone Treatment in Surgery



- 1915 A. Wolff,
Berlin, Germany
- 1935 E. Payr,
Leipzig, Germany
- 1937 P. Aubourg,
Paris, France
- 1977 O. Rokitansky,
Vienna, Austria
- 1981 H. Werkmeister,
Oberhausen, Germany
- 1987 H.G. Knoch,
Dresden, Germany

Milestones of Medical Ozone

Ozononised Water in Dental Medicine



- 1935 E.A. Fisch,
Locarno, Switzerland
- 1976 R. Türk,
Bad Pyrmont, Germany
- 1991 H. Kirschner,
Giessen, Germany
A. Filippi, Basel, Switzerland

Milestones of Medical Ozone

Applications: Topical Treatments 2



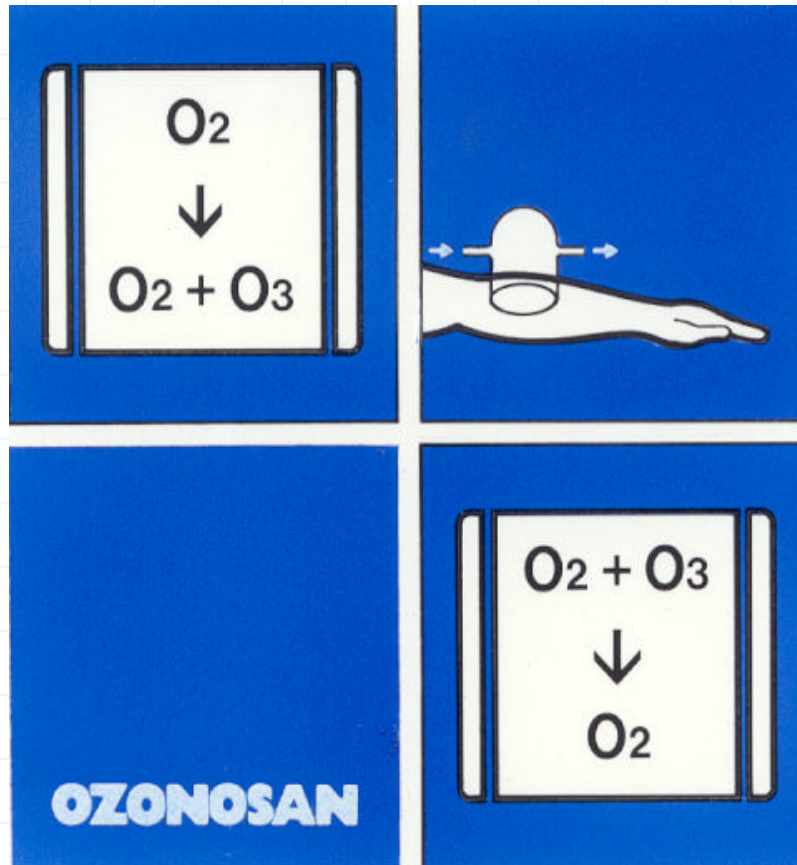
- Transcutaneous gas bath in ozone resistant plastic bags
- 1958 J. Hänsler, H. Wolff, Iffezheim/ Frankfurt, Germany

Indications:

- Ulcus cruris,
- Dermatitis,
- Fungus infections

Milestones of Medical Ozone

Applications: Topical Treatments 1



- Low pressure ozone gas application
- 1981 H. Werkmeister
Oberhausen, Germany

Indications:

- Decubitus ulcers,
- Diabetic gangrene,
- Fistulas and
- Badly healing wounds

Milestones in Medical Ozone Applications: Rectal Insufflation



- 1937 P.Aubourg,
Paris, France
- 1987 H.G. Knoch,
Dresden, Germany

Indications:

- Proctitis
- Colitis

Milestones in Medical Ozone

Applications: Major Autohaemotherapy



- Major Autohaemotherapy as extracorporeal blood treatment avoiding intravascular gas application forms.
- 1968 H. Wolff, Frankfurt, Germany
Indications:
 - Arterial circulatory disorders
 - Immunomodulation
 - Rheumatoid arthritis

Milestones of Medical Ozone Applications: Intraarticular Injections in Orthopedics



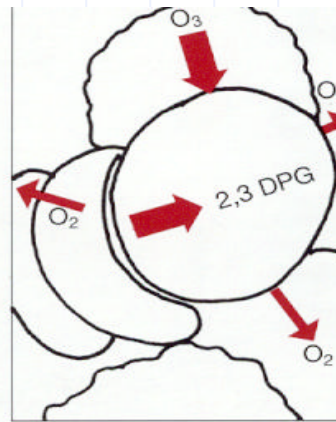
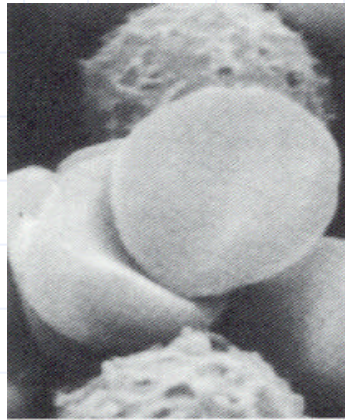
- 1981 Z. Fahmy,
Bad Kreuznach, Germany
- 1989 E. Riva-
Sanseverino,
Bologna, Italy

Indications:

- Knee arthrosis,
- Gonarthrosis
- and rheumatoid arthritis
as supportive therapy

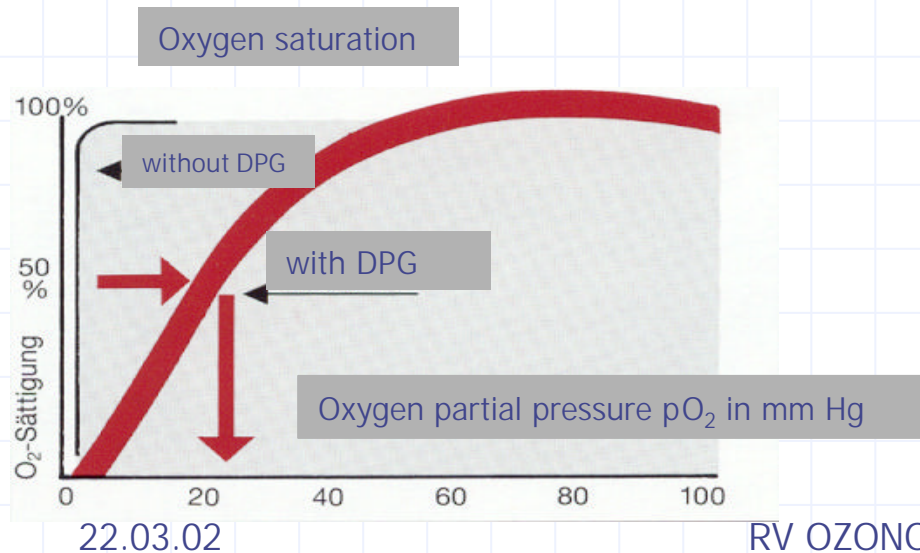
Milestones of Medical Ozone

Pharmacological Effects 1: Red Blood Cells



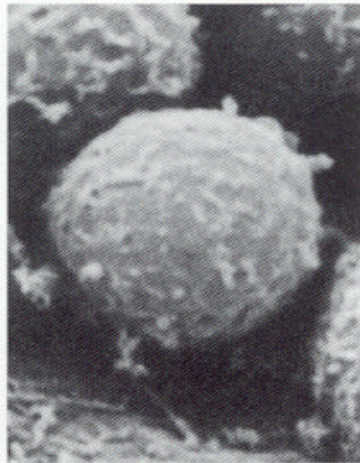
- 1975 Buckley et al.
- 1979 Freeman et al.
- 1977-1986 Washüttl et al.
- 2001 Lell et al.

- Peroxide formation and activation of the RBC-metabolism via the glutathion system with improvement of oxygen release



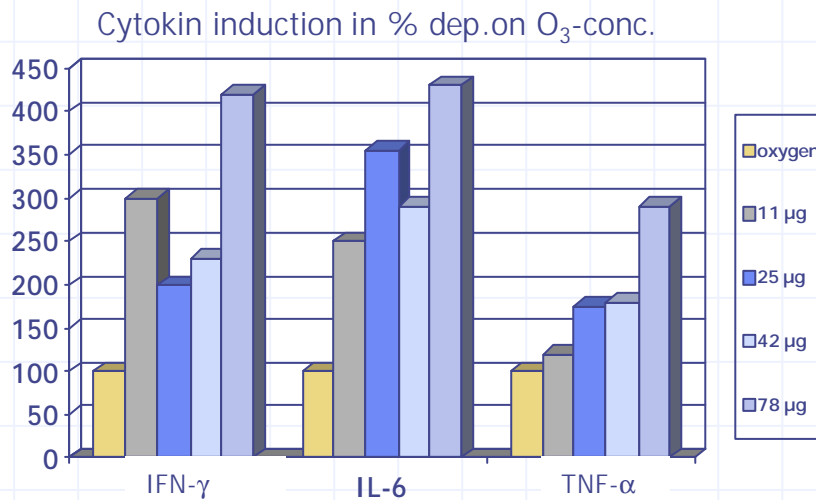
Milestones of Medical Ozone

Pharmacological Effects 2: immunocompetent cells



■ 1990 Bocci et al.

■ Induction of cytokines such as interferons, interleukins and growth factors



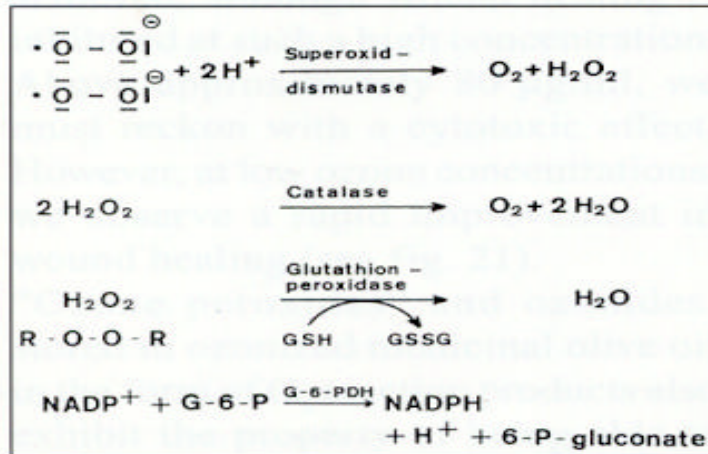
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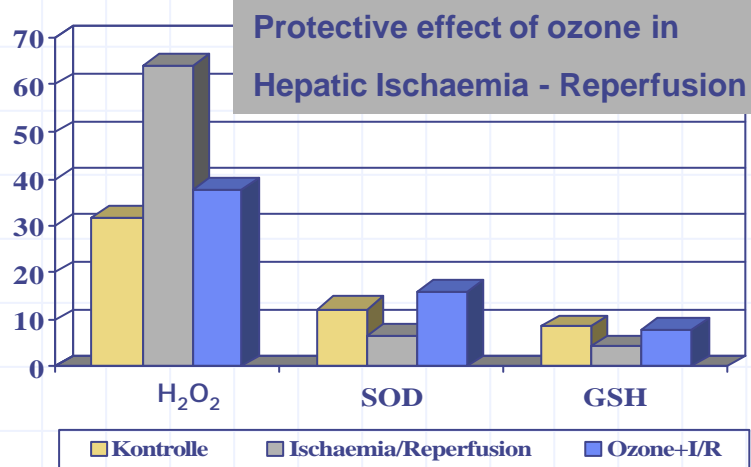
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Milestones of Medical Ozone

Pharmacological Effects 3: Radical Scavengers



- 1998 León, Bocci et al.
- 1999 Peralta et al.

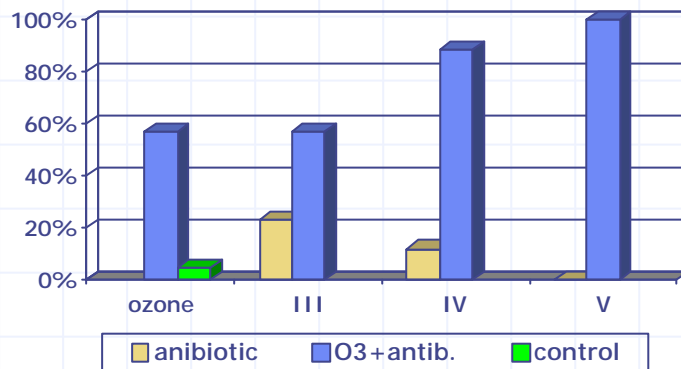


- Activation of antioxidative enzymes and radical scavengers as protective effect in damage by free radicals

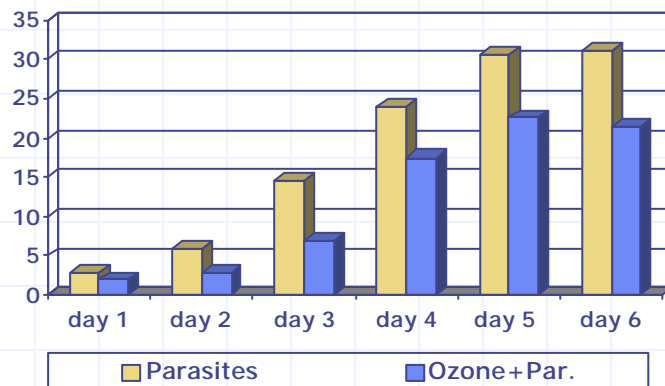
Milestones in Medical Ozone

Pharmacological Effects 4: Ozone and Prevention

Survival rate in lethal septic peritonitis



Parasitaemia in %



- 1999 Schulz et al.
 - Improvement of survival rate in septic peritonitis in an animal model by pretreatment with ozone.
 - Synergistic effect with antibiotics.
- 2001 Lell et al.
 - Growth inhibitory effect of plasmodium in infected RBC's by pretreatment with ozone.

Indications of Ozonotherapy Today and the Pharmacological Background

Indications

- External ulcers and skin lesions
- Arterial circulatory disorders
- Immunodeficiency and immunodisbalance
- Inflammatory conditions
- Dental Medicine

Mechanism of Action

- Disinfection, wound cleansing
- Activation of RBC-metabolism
- Activation of immunocompetent cells
- Activation of antioxidants and radical scavengers
- Disinfection, woundhealing