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MECTRON OZOACTIVE
THE OZONE INFUSER



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OZONATED WATER - SAFE AND DISINFECTANT SOLUTION

WHAT ARE THE BENEFITS OF OZONE

Ozone is a powerful oxidizing agent which produces a broad spectrum biocide that destroys all bacteria and viruses when dissolved in water.

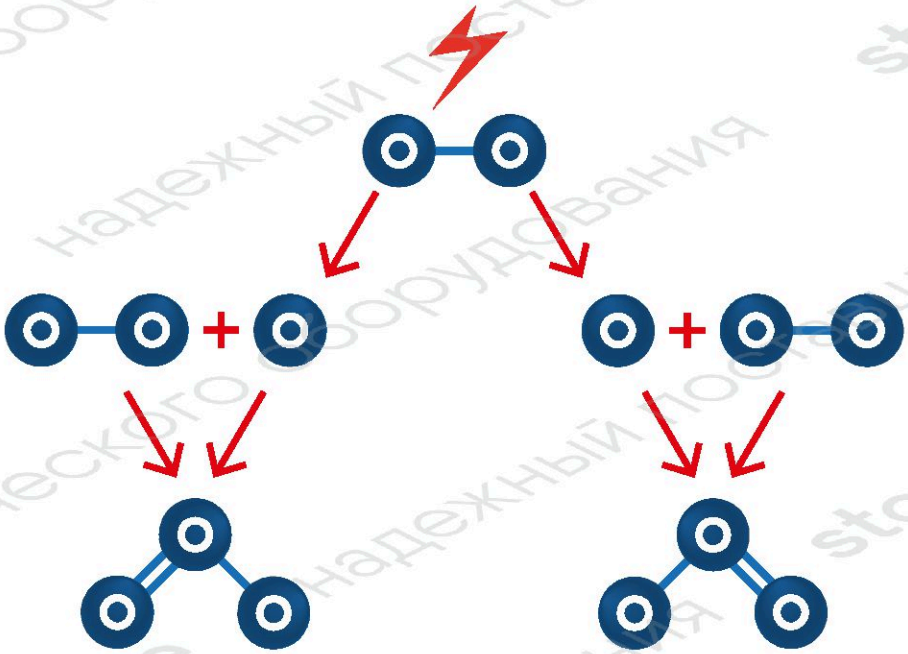
These properties explain why ozone has been used over 100 years for:

- disinfection of drinking water
- the production processes in the food industry
- disinfection in healthcare environments.

OZONATED WATER AS DISINFECTANT

Dissolved in water in the proper concentration, ozone has a high oxidation potential which is 1.5 times greater than chloride when used as an antimicrobial agent against bacteria, viruses, fungi and protozoa.[1]





WHAT IS OZONE?

Ozone is a natural inorganic molecule with the chemical formula O_3. Each molecule contains three atoms of oxygen instead of two. It is a pale blue gas, with a pungent odor that is formed naturally in the atmosphere. For example, ozone is formulated by lightning discharges during a thunderstorm, giving the air its fresh and clean smell afterward.

HOW IS OZONE GENERATED?

A high voltage is passed across a gas stream containing oxygen - the energy of the high voltage causes a chemical reaction, splitting an oxygen molecule O_2 into two oxygen atoms O, which recombine with ordinary molecules of oxygen O_2 to form ozone O_3. Since ozone is highly reactive and has a short half-life, it is very difficult to store and transport: that is why it has to be generated on-site for immediate use.

1 Nogales CG, Ferrari PH, Kantorovich EO, Lage-Marques JL. Ozone Therapy in Medicine and Dentistry. 2008, the journal of contemporary dental practice. 9(4) 75-84

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OZOACTIVE - THE OZONE INFUSER

OzoActive generates ozone gas for distribution into the irrigation lines of mectron PIEZOSURGERY® and ultrasound units, resulting in concentrations of ozonated water ranging from 0.011 mg to 0.079 mg per liter. At this concentration range ozonated water is proven to have biocidal effects.[5]

The flow of ozonated water minimizes the risk of transmission of fungi, bacteria and viruses through aerosols and stimulates the blood circulation and the immune response of the patient. Within seconds the ozone is transformed into oxygen without leaving chemical residues behind.



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OZONE IN ORAL SURGERY

THE CLINICAL BENEFITS

Ozone therapy has been used for some time in dentistry to improve micro-circulation by increasing the availability of oxygen at the tissue level. This results in:

- faster healing of the surgical site [2]
- reduction of the inflammatory levels [3]
- reduction of postoperative pain [4]
- painless sterilization of the surgical site. [5]

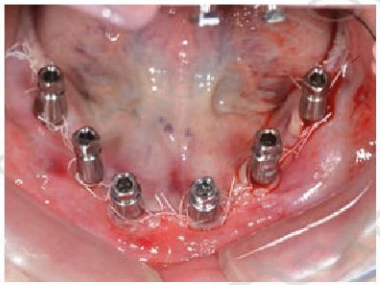
The broad-spectrum antimicrobial action promotes the release of growth factors. The anti-inflammatory and analgesic effect improves the predictability of surgical interventions and ensures thorough decontamination of the surgical site.



CLINICAL CASE WITH PIEZOSURGERY® PLUS OZOACTIVE BY PROF. TOMASO VERCELLOTTI



Time zero: extraction of tooth 33 and 35, preparation of the implant sites with PIEZOSURGERY® in combination with OzoActive device.



Time zero: after placing 6 implants, note the integrity of the peri-implant soft tissues despite the flaps being exposed for the entire duration of the intervention.



Day after surgery: note the absence of edema or hematomas of the peri-implant tissues; patient reported taking only one tablet of Ibuprofen; analgesic effect is common after the use of OzoActive in implantology.



Day after surgery: delivery of temporary screw retained prosthesis

2 Eroglu Z, Kurtis B, Altuğ H, Şahin S, Tuter G, Barış E. (2018). Effect of topical ozonetherapy on gingival wound healing in pigs: histological and immuno-histochemical analysis. Journal of Applied Oral Science. 27. 10.1590/1678-7757-2018-0015.
3 Talmaç A, Çalışır M. (2020). Efficacy of gaseous ozone in smoking and non-smoking gingivitis patients. Irish Journal of Medical Science (1971 -). 10.1007/s11845-020-02271-x.
4 Kazancioglu H, Ezirganli S, Demirtas N. (2013). Comparison of the influence of ozone and laser therapies on pain, swelling, and trismus following impacted third-molar surgery. Lasers in medical science. 29. 10.1007/s10103-013-1300-y.
5 Oldoini G, Ricci Frabattista G, Saragoni M, Cosola S, Giammarinaro E, Genovesi A, Marconcini S. (2020). Ozone Therapy for Oral Palatal Ulcer in a Leukaemic Patient. European journal of case reports in internal medicine. 7. 001406. 10.12890/2020_001406.

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OZONE IN PROPHYLAXIS

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THE CLINICAL BENEFITS

In oral hygiene and prophylaxis ozone-therapy has been used in the following applications:

- perio pocket detersion and disinfection [6]
- periimplantitis management [7]
- hygiene treatment of fixed and mobile prosthesis [8]
- orthodontic patients [9]
- inflammatory level reduction [10]
- analgesic effect. [4]

During oral hygiene treatments, when removing bacterial plaque, the use of ozonated water enhances the antiseptic, analgesic and hemostatic effect.



CLINICAL CASE WITH COMBI *touch* PLUS OZOACTIVE BY PROF. ANNAMARIA GENOVESI



Time zero: the patient arrives for observation



Time one: 10 days after the patient's home oral care, based on education and motivation received at time zero



Time two: ultrasonic debridement treatment



Time two: at the end of the debridement treatment



Time three: check up after one month

6 Parisi L, Luraghi G, Genovesi A, Chiesa A, Maiorani C, Scribante A, Segù M, Butera A, Rodriguez y Baena R. (2019). Pilot study for evaluation of reduction of mucositis with the support of ozonated-water oral irrigator

7 Giammarinaro E, Marconcini S, Barone A, Covani U. (2018). Clinical outcomes of implants placed in ridge-preserved vs non-preserved sites: a 4 -year randomized clinical trial. Clinical Implant Dentistry and Related Research. 20. 10.1111/cid.12682.

8 La bocca dolce: nota tecnica sul mantenimento della riabilitazione implanto-protesica complessa nel paziente diabetico A.M. Genovesi, E. Giammarinaro

9 Cosola S, Giammarinaro E, Genovesi A, Pisante, R, Poli, G, Covani U, Marconcini S. (2019). A short-term study of the effects of ozone irrigation in an orthodontic population with fixed appliances. European Journal of Paediatric Dentistry. 20. 15-18. 10.23804/ejpd.2019.20.01.03.

10 Marconcini S, Giammarinaro E, Giampietro O, Giampietro C, Söder B, Genovesi A, Barone A, Covani U, Dds,. (2017). Oxidative stress and periodontal disease in diabetic patients: a 3-month pilot study. Dental, Oral and Craniofacial Research. 3. 1-5. 10.15761/DOCR.1000217.

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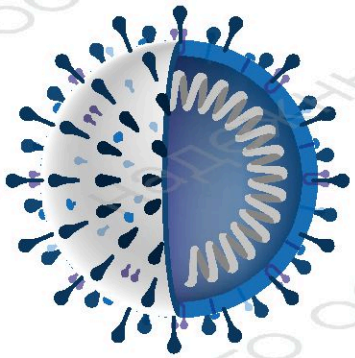
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OZONE - THE SAFE WAY TO REDUCE AEROSOL RISK



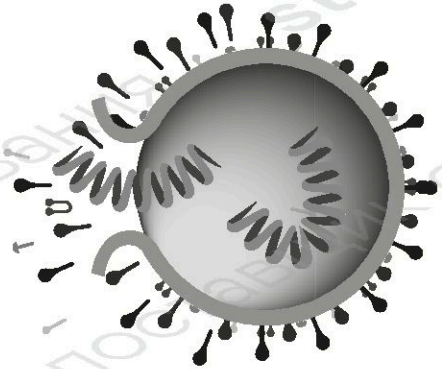
AEROSOLS ARE INEVITABLE

The most commonly used dental equipment generates aerosols, i.e. turbines, micromotors and ultrasounds. To protect both clinicians and patients, it is imperative to have a system to prevent the spread of aerosols in the dental practice, especially under the current COVID emergency.



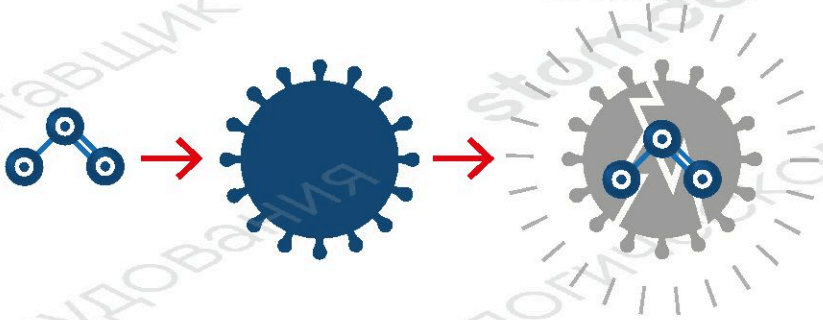
INHIBIT SARS-COV-2

SARS-CoV-2 has a similar structure to the older SARS-CoV-1 virus. Both need an intact capsid and lipid viral envelope to infect cells. Common disinfectants, including alcohol, detergents, soaps or ozone, can disrupt the lipid envelope and its components, destroying the ability for the virus to infect.



OZONE AGAINST SARS-COV-2

The use of ozone is proven to be effective against SARS coronavirus.[11,12] The mechanism behind this is the disruption of the lipid envelope of the SARS virus, inhibiting its ability to attach to host cells.



Ozone dissolved in water can inactivate viruses

"The results of the study showed that ozone exposure reduced viral infectivity by lipid peroxidation and subsequent lipid envelope and protein shell damage. These data suggest that a wide range of virus types can be inactivated in an environment of known ozone exposure."[13]

11 Kenneth K K LAM. Ozone Disinfection of SARS-Contaminated Areas. 2004, under: https://www.ozonetech.com/sites/default/files2/pdf/Ozone_disinfection_of_SARS_Contaminated_Areas.pdf (downloaded 25.09.2020)
12 Paglia L, COVID-19 and Paediatric Dentistry after the lockdown. European journal of paediatric dentistry. 2020, DOI 10.23804/ejpd.2020.21.02.01
13 Murray BK, Ohmine S, Tomer DP, Jensen KJ, Johnson FB, Kirsic JJ, Robison RA, O'Neill KL. Virion disruption by ozone-mediated reactive oxygen species. Journal of Virological Methods, 2008 Oct, 153-1 (74-77)

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OZOACTIVE - MULTIFUNCTIONAL

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DEDICATED PROGRAMS

OzoActive can be used with mectron PIEZOSURGERY® *touch* or *white* units, as well as with prophylaxis ultrasound units like combi *touch* or multipiezo. The corresponding program is indicated with *Oral Surgery* or *Prophylaxis*.



CONNECTION OF PROPHYLAXIS ULTRASOUND UNITS

A dedicated reusable irrigation set will combine both units. The OzoActive device connects between the pump and the water tank of the mectron unit.



CONNECTION OF PIEZOSURGERY® UNITS

A dedicated single use irrigation set will combine both units. For the connection, the traditional pump tube is simply replaced by the new OzoActive irrigation set.



DEDICATED FOOTPEDAL

Mectron PIEZOSURGERY® or ultrasound units must activate simultaneously with OzoActive, as such a dedicated footpedal with 2 connection cables is included with the original equipment.



A comprehensive package

The original packaging of the OzoActive contains:

- device body
- multivoltage power adapter
- footpedal
- three disposable irrigation sets for PIEZOSURGERY®
- one irrigation set for prophylaxis ultrasound units
- pump cover for prophylaxis ultrasound units .

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