Indroduction

Ozone O_3 is a triatomic gaseous molecule which has been used as a powerful oxidant in medicine for more than 150 years[1]. In nature, O_3 is generated during storms due to the electrical discharges of the rays that react with atmospheric O_2 to produce O_3. Ozone attaches to particles of pollutants and toxic waste in the atmosphere, oxidising them and thereby effectively neutralising them. Medical ozone is also a therapeutic tool of great power, which can aid the body in regaining health.

Ozone is active against a broad spectrum of microorganisms. Ozone treatment can enhance safety and increase shelf life with limited impact on product quality. Ozone is known to be one of the strongest oxidizers that can have applications in foods. The generators disinfect air indoors and help to prevent the spreading of COVID-19 and other infections in hospitals, offices, business facilities, and at homes.

[1] A. Elvis, J.S. Ekta; Ozone therapy: A clinical review; (2011).

Energetic influence of ozone

The oxygen gas which has 2 atoms [O_2] is split, and the atoms regroup into threes [O_3]. This ozone gas is unstable and soon rearranges itself into oxygen again. In the gaseous state, ozone is denser than air, colorless at lower concentrations and possesses a distinct odor.

The body becomes deprived of adequate levels of oxygen through improper breathing, polluted air, inadequate nutrition and junk foods, and stress. This provides an anaerobic environment in which the micro-organisms thrive

In addition, cancer begins when a normal cell cannot get enough oxygen. If the level of available oxygen falls below 60%, a cancer response is triggered in the cells. In order to survive the cell begins to ferment sugar instead of burning it. This results in a greatly reduced energy output, which means that a proper enzyme coating cannot be maintained around the cell. The restriction on cell replication is inactivated, and the cell begins to make copies of itself wildly.

When there is enough oxygen, i.e. during the aerobic regime, glucose is metabolized to pyruvate and 1 glucose molecule produces **36 molecules of ATP**

In case of lack of oxygen or cellular stress (lack of free energy), anaerobic metabolism of glucose occurs, producing lactic acid and only **2 molecules of ATP** from a glucose molecule, i.e. 18 times less.

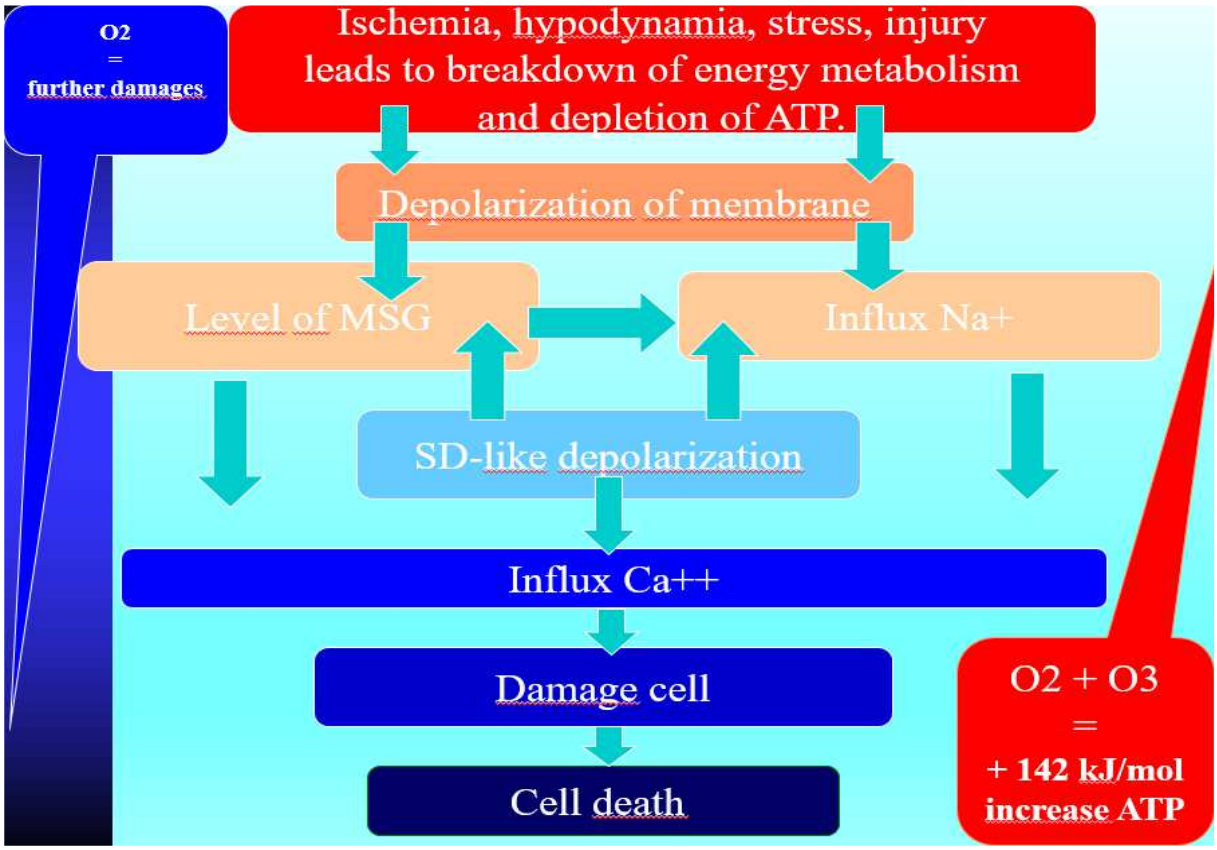
Active oxygen - ozone can supplement the lack of free energy.
When breaking up, **142 kJ/mol of O3 molecules is released**.

Lack of ATP in the ischemic site (result of aerobic permutation glycolysis to anaerobic) causes depolarization of cell membranes and failure of electrical potential. If enough energy released during ozone decay is to reach the deposit, the offer for ATP production increases.

The energetic influence is best worked out in cerebral ischemia. The effect is manifested mainly in the area of the ischemic penumbra, where at that time the blood flow is low, but still preserved. Stabilization of membranes and their phospholipids reduces the risk of tissue necrosis. The function of NA/K pump and CA++ ATP dependent channels is improved.

This theory of nerve cell ischemia is generally true and applicable for all other cells. The goal of ozone treatment is creating an energy balance at the cellular level. The cell needs enough energy to protect and regenerate. The energy released during the decay of O3 can be used by cells.

The skin draws this energy thanks to oxygen and aerobic breathing. Ozone releases additional energy needed. This is a basic condition for accelerated regeneration and removal of oxidative stress in the cell. Among other things, ozone can break down toxic substances in the body into non-toxic substances that the body can easily eliminate.



Effects of ozone

The benefits of the oxygen-ozone therapy are numerous and change according to the different concentrations of ozone in oxygen:

- Anti-inflammatory action[2]
- Antibacterial, antiviral, antimycotic action[3]
- Antitumor - an increase in tumor necrosis factor[4]
- Direct neurotrophic action[5]

[2] Tartari APS, Moreira FF, Pereira MCDS, Carraro E, Cidral-Filho FJ, Salgado AI, Kerppers II. Anti-inflammatory Effect of Ozone Therapy in an Experimental Model of Rheumatoid Arthritis. Inflammation. 2020 Jun;43(3):985-993. doi: 10.1007/s10753-020-01184-2. PMID: 32382842.

[3] Zargaran M, Fatahinia M, Zarei Mahmoudabadi A. The efficacy of gaseous ozone against different forms of *Candida albicans*. Curr Med Mycol. 2017 Jun;3(2):26-32. doi: 10.18869/acadpub.cmm.3.2.26. PMID: 29354778; PMCID: PMC5763895.

[4] Clavo B, Santana-Rodríguez N, Llontop P, Gutiérrez D, Suárez G, López L, Rovira G, Martínez-Sánchez G, González E, Jorge IJ, Perera C, Blanco J, Rodríguez-Esparragón F. Ozone Therapy as Adjuvant for Cancer Treatment: Is Further Research Warranted? Evid Based Complement Alternat Med. 2018 Sep 9;2018:7931849. doi: 10.1155/2018/7931849. PMID: 30271455; PMCID: PMC6151231.

[5] G. Tabaracci, V. Covi; Oxygen-Ozone Therapy and Ion Cyclotron Resonance SEQEX; International Journal of Ozone Therapy 10: 59-61, 2011, p. 58; https://www.wfoot.org/wp-content/uploads/2016/12/IJOT_10_1_ID76.pdf.

- Dehydrating on nucleus pulposus action[6]
- Detoxifying, deodorizing (i. e. removes odors), disinfecting[7]
- Energy effect, states of mental and physical exhaustion, slowing down aging
- Immunorestorative effect, autoimmune disorders, allergies
- Microcirculation reactivating action[8]
- Regenerative - accelerated healing of wounds, fractures[9]
- Support of blood supply to all tissues including the central nervous system[10]
- Combination of all mechanisms - e.g. in diabetes, in the stage of all its complications[11].

Deactivation of microbes by ozone[12]

Most undesirable micro-organisms are anaerobic, which means that they thrive in the absence of oxygen; in fact, they are destroyed by the presence of oxygen. Organisms such as fungi, parasites, bacteria, and primitive viruses.

Healthy cells which have sufficient oxygen and nutrients, manufacture an enzyme coating around themselves which protects them against invasion. Oxygen starved cells are unable to produce enough enzymes to fortify their cell walls; they subsequently become weaker and more vulnerable.

When ozone is introduced into the body, it is broken down into free radical agents called peroxides. These have beneficial effects because they are attracted to weakened or diseased cells and react with lipids [fats] in the cell membrane. The enzymes in the healthy, intact cell wall

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[6] Murphy K, Elias G, Steppan J, Boxley C, Balagurunathan K, Victor X, Meaders T, Muto M. Percutaneous Treatment of Herniated Lumbar Discs with Ozone: Investigation of the Mechanisms of Action. J Vasc Interv Radiol. 2016 Aug;27(8):1242-1250.e3. doi: 10.1016/j.jvir.2016.04.012. Epub 2016 Jun 28. PMID: 27363296.
Erario MLÁ, Croce E, Moviglia Brandolino MT, Moviglia G, Grangeat AM. Ozone as Modulator of Resorption and Inflammatory Response in Extruded Nucleus Pulposus Herniation. Revising Concepts. Int J Mol Sci. 2021 Sep 14;22(18):9946. doi: 10.3390/ijms22189946. PMID: 34576108; PMCID: PMC8469341.

[7] Karlovsky P, Suman M, Berthiller F, De Meester J, Eisenbrand G, Perrin I, Oswald IP, Speijers G, Chiodini A, Recker T, Dussort P. Impact of food processing and detoxification treatments on mycotoxin contamination. Mycotoxin Res. 2016 Nov;32(4):179-205. doi: 10.1007/s12550-016-0257-7. Epub 2016 Aug 23. PMID: 27554261; PMCID: PMC5063913.

[8] Yousefi B, Banihashemian SZ, Feyzabadi ZK, Hasanpour S, Kokhaei P, Abdolshahi A, Emadi A, Eslami M. Potential therapeutic effect of oxygen-ozone in controlling of COVID-19 disease. Med Gas Res. 2022 Apr-Jun;12(2):33-40. doi: 10.4103/2045-9912.325989. PMID: 34677149; PMCID: PMC8562402.

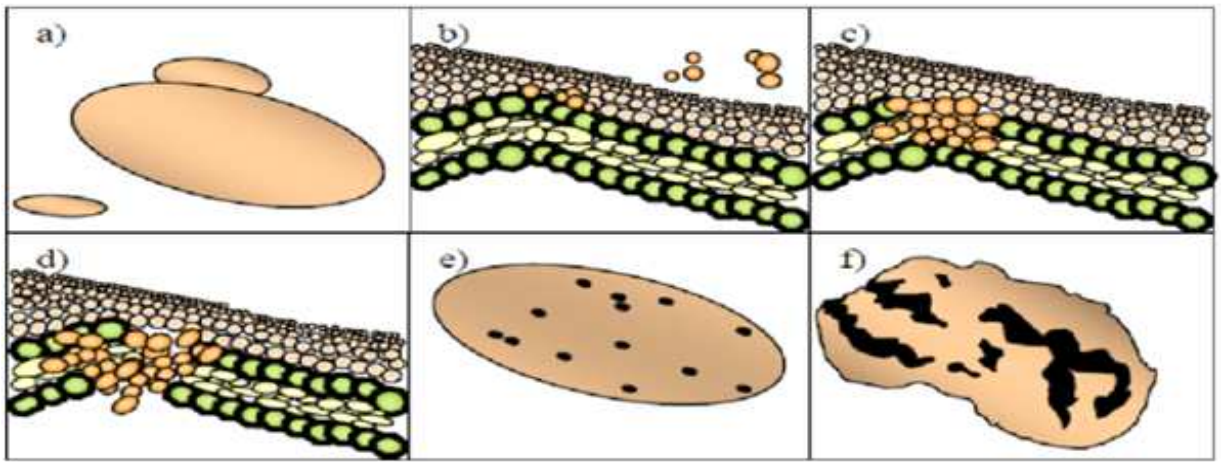
[9] Wen Q, Liu D, Wang X, Zhang Y, Fang S, Qiu X, Chen Q. A systematic review of ozone therapy for treating chronically refractory wounds and ulcers. Int Wound J. 2022 May;19(4):853-870. doi: 10.1111/iwj.13687. Epub 2021 Oct 6. PMID: 34612569; PMCID: PMC9013593.

[10] Clavo B, Catalá L, Pérez JL, Rodríguez V, Robaina F. Ozone Therapy on Cerebral Blood Flow: A Preliminary Report. Evid Based Complement Alternat Med. 2004 Dec;1(3):315-319. doi: 10.1093/ecam/neh039. Epub 2004 Oct 6. PMID: 15841265; PMCID: PMC538510.
Tricarico G, Travagli V. The Relationship between Ozone and Human Blood in the Course of a Well-Controlled, Mild, and Transitory Oxidative Eustress. Antioxidants (Basel). 2021 Dec 4;10(12):1946. doi: 10.3390/antiox10121946. PMID: 34943049; PMCID: PMC8750071.

[11] Martinez-Sanchez G., Al-Dalain S.M., Menendez S., Re L., Giuliani A., Candelario-Jalil E., Alvarez H., Fernandez-Montequin J.I., Leon O.S. Therapeutic efficacy of ozone in patients with diabetic foot. *Eur. J. Pharmacol.* 2005;523:151–161.

[12] M. Ziyaina; B. B. Rasco; Inactivation of microbes by ozone in the food industry: A review. African Journal of Food Science, 2021.

prevent penetration by these peroxides. Thus the peroxides in ozone selectively attack only those cells which contain parasites, viruses etc, or are weakened by cancer or toxins.



Bacteria undergoing lysis during disinfection with ozone:

(A) The cell membrane is the first site under attack.

(B) The ozone attacks glycoproteins, glycolipids or certain amino acids and acts on the sulfhydryl group of certain enzymes. Ozone damage results in breakage of the cellular membrane, inhibiting cellular reactivation mechanisms, and oxidizing unsaturated fatty acids, lipid fatty acids, glycoproteins, glycolipids, amino acids, sulfhydryl groups of certain enzymes, phenolic rings, and nucleic acids.[13]

(C) The effect of ozone on the cell wall begins to become apparent.

(D) The bacteria cell begins to break down after coming in contact with ozone. Therapeutic improvement is ozone's ability to elicit mild oxidative stress and act as a powerful disinfectant.

(E) The cell membrane is perforated during this process.

(F) The cell disintegrates or suffers cellular lysis. Ozone oxidizes the compound phospholipids and lipoproteins of the cell walls of bacteria; hence, they lose their integrity, and their growth

[13] M.A. Khadre, A. E. Yousef, J.-G. Kim; Microbiological Aspects of Ozone Applications in Food: A Review. African Journal of Food Science, 2006.

and multiplication are inhibited. A deactivation involves destroying biological activities of a microbial cell such as inducing changes to structural components of the cell causing cell death through a change in cell permeability and cell lysis and by altering the ability of a cell to divide and thereby reproduce.

Pathogen (viruses, bacteria, fungi and protozoa)	Dosage (ozone)
Aspergillus Niger (Black Mount)	Destroyed by 1.5 to 2 mg/I
Bacillus Bacteria	Destroyed by 0.2 m/I within 30 seconds
Bacillus Anthracis (causes anthrax in sheep, cattle and pigs. Also a human pathogen)	Ozone susceptible
Bacillus cereus	99% destruction after 5-min at 0.12 mg/l in water
B. cereus (spores)	99% destruction after 5-min at 2.3 mg/l in water
Bacillus subtilis	90% reduction at 0.10-PPM for 33 minutes
Bacteriophage f2	99.99% destruction at 0.41 mg/l for 10-seconds in water
Botrytis cinerea	3.8 mg/l for 2 minutes
Candida Bacteria	Ozone susceptible
Clavibacter michiganense	99.99% destruction at 1.1 mg/l for 5 minutes
Cladosporium	90% reduction at 0.10-PPM for 12.1 minutes
Clostridium Bacteria	Ozone susceptible
Clostridium Botulinum Spores. Its toxin paralyses the central nerve system, being a poison multiplying in food and meals.	0.4 to 0.5 mg/l threshold value
Coxsackie Virus A9	95% destruction at 0.035 mg/l for 10-seconds in water
Coxsackie Virus B5	99.99% destruction at 0.4 mg/l for 2.5-minutes in sludge effluent
Diphtheria Pathogen	Destroyed by 1.5 to 2 mg/l

Eberth Bacillus (Typhus abdomanalis). Spreads typically by aqueous infection and causes typhoid.	Destroyed by 1.5 to 2 mg/l
Echo Virus 29: The virus most sensitive to ozone.	After a contact time of 1 minute at 1 mg/l of ozone, 99.999% killed.
Enteric virus	95% destruction at 4.1 mg/l for 29 minutes in raw wastewater
Escherichia Coli Bacteria (from feces)	Destroyed by 0.2 mg/l within 30 seconds in air
E-coli (in clean water)	99.99% destruction at 0.25 mg/l for 1.6 minutes
E-coli (in wastewater)	99.9% destruction at 2.2 mg/l for 19 minutes
Encephalomyocarditis Virus	Destroyed to zero level in less than 30 seconds with 0.1 to 0.8 mg/l.
Endamoebic Cysts Bacteria	Ozone susceptible
Enterovirus Virus	Destroyed to zero level in less than 30 seconds with 0.1 to 0.8 mg/l.
Fusarium oxysporum f.sp. lycopersici	1.1 mg/l for 10 minutes
Fusarium oxysporum f.sp. melonogea	99.99 % destruction at 1.1 mg/l for 20 minutes
GDVII Virus	Destroyed to zero level in less than 30 seconds with 0.1 to 0.8 mg/l.
Hepatitis A virus	99.5% reduction at 0.25 mg/l for 2-seconds in a phosphate buffer
Herpes Virus	Destroyed to zero level in less than 30 seconds wit 0.1 to 0.8 mg/l.
Influenza Virus	0.4 to 0.5 mg/l threshold value
Proteus Bacteria	Very susceptible
Pseudomonas Bacteria	Very susceptible
Rhabdovirus virus	Destroyed to zero level in less than 30 seconds with 0.1 to 0.8 mg/l
Salmonella Bacteria	Very susceptible
Salmonella typhimurium	99.99% destruction at 0.25 mg/l for 1.67 minutes in water

Schistosoma Bacteria	Very susceptible
Staph epidermidis	90% reduction at 0.1-ppm for 1.7 min
Staphylococci	Destroyed by 1.5 to 2.0 mg/l
Stomatitis Virus	Destroyed to zero level in less than 30 seconds with 0.1 to 0.8 mg/l
Streptococcus Bacteria	Destroyed by 0.2 mg/l within 30 seconds
Verticillium dahliae	99.99 % destruction at 1.1 mg/l for 20 minutes
Vesicular Virus	Destroyed to zero level in less than 30 seconds with 0.1 to 0.8 mg/l
Virbrio Cholera Bacteria	Very susceptible
Vicia Faba progeny	Ozone causes chromosome aberration and its effect is twice that observed by the action of X-rays

Medical application areas of ozone therapy

The ozone therapy is a non-invasive, non-pharmacological, no-side effect and low-cost procedure applied in medicine for the treatment of more than 50 pathological processes:

- **Orthopaedics**: arthropaties, neck pains, backaches and lumbosciatica with disc herniation, vertebral stenosis, periarthritis, epicondylitis and epitrochleitis, tendinitis, trochanteritis, gonarthrosis and condropathies, carpal and tarsal tunnel syndrome, Morton's neuroma.
- **Allergology**: Food allergies and intolerances, rhinitides.
- **Angiology**: arterial diseases, ulcers and gangrenes.
- **Digestive apparatus**: gastritis, Helicobacter pylori, chronic ulcerative colitis, Crohn's disease, constipation.
- **Respiratory system**: bronchitis, bronchial asthma, emphysema.
- **Dentistry:** disinfect the canal inside the tooth and the tissues around the tooth root.
- **Dermatology**: acne, allergies, eczemas, mycosis, herpes, psoriasis.
- **Geriatrics**: vascular and not vascular alterations connected to senility.
- **Gynecology**: vaginitis, dyspareunia.
- **Aesthetic medicine**: cellulitis, capillaries, teleangiectasias, wrinkles, scars.
- **Internal medicine**: hepatitis, turnover diseases, dyslipidemias, anemia, disendocrine and dysmetabolic states.
- **Neurology**: vasomotor and cluster headaches, Parkinson's disease, Alzheimer's disease, multiple sclerosis, amyotrophic lateral sclerosis, neuritis.
- **Ophthalmology**: retinal arteriopathies, dry maculopathy, dry eye syndrome.
- **Oncology**: neoplastic diseases in conjunction with antiblastic drugs (the therapy is not substitutive), local treatment of damages produced by radiotherapy.

- **Otorhinolaryngology**: chronic and purulent otitis, sinusitis, allergic rhinitis, rhinogenous deafness, ear ringing.
- **Rheumatology**: rheumatoid arthritis, LES, psoriasis, etcetera.
- **Surgery**: bedsores and postphlebitic an diabetic ulcers, burns.
- **Urology**: cystitis, vascular impotence, miction disorders, prostatitis.

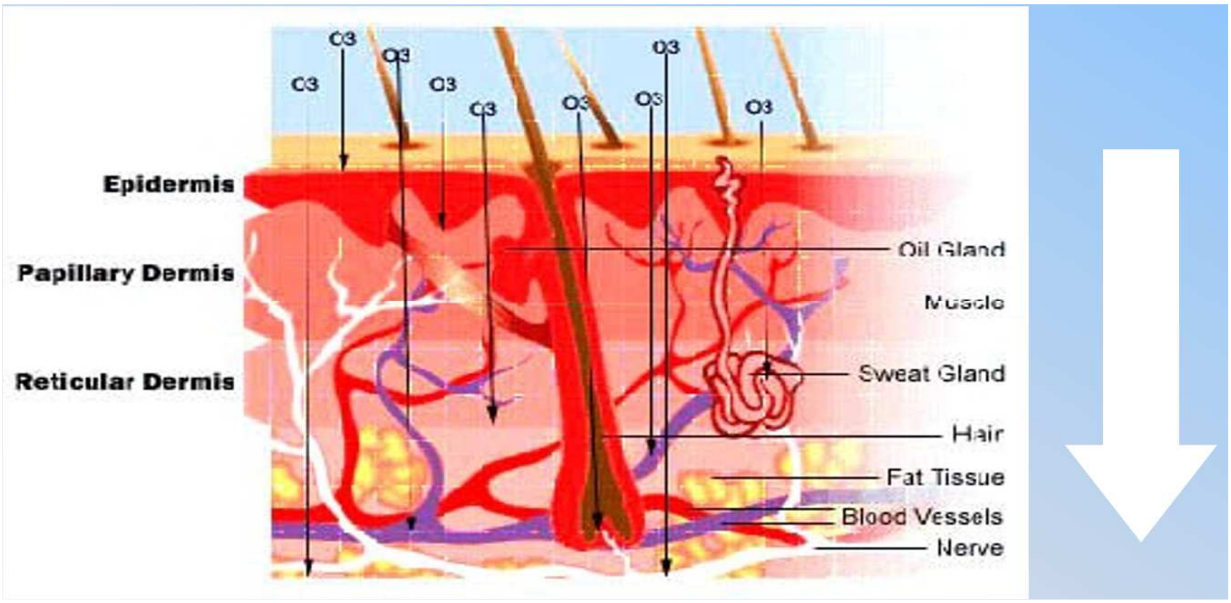
Ozone in dermatology

Ozone is widely known as the ozone that has the property of sterilizing and now is popularly used in beauty industry. As the gas is extremely unstable, there are some forms used in ozone therapy in dermatology. They are mainly categorizable as topical application with ozonated water or oils, ozone bags, and autohemotherapy.

Dalmer cosmetics is a topical agent based on ozonated olive oil.

PREPARATION	METHOD	ADVANTAGES	DISADVANTAGES
Ozone in water or oil	Immersion or compress	Therapy dosage maintenance/No age restrictions/Low adverse risk	Rapid ozone degradation when in water

Ozone contained in cosmetic products penetrates into all layers of the skin.



Medical studies of ozone on skin

Benefits reported for acne were reduction in the inflammatory process and, for dermatitis, were reduction of size of lesions and prurigo[14]. In psoriasis, the therapy reduced painful states, enhanced circulation, and the immune system[15]; in systemic sclerosis, it aided in early healing and enhanced joint mobility[16]; for herpes zoster, it significantly reduced duration of the pathological condition[17]; and, for ulcers and scarring, it helped with the repair and regeneration processes, increasing blood circulation and combating bacteria and infectious agents[18].

Interpretation of studies in dermatology using ozone[19]

Only Gloor and Lipphardt reported ozone therapy as non-effective for acne treatment, because the therapy did not present the expected effect on Propionibacterium acnes and other microorganisms. The other included studies reported a possible safety of the therapy, through the use of adequate ozone concentrations for the treatment of each type of dermatological condition, with the dose used not being sufficient to cause damage and adverse effects to the research participants. Benefits reported for acne were reduction in the inflammatory process and, for dermatitis, were reduction of size of lesions and prurigo. In psoriasis, the therapy reduced painful

[14] Zeng J, Dou J, Gao L et al. International Immunopharmacology Topical ozone therapy restores microbiome diversity in atopic dermatitis. *Int Immunopharmacol.* 2020;80:106191.
Zeng J, Dou J, Gao L et al. International Immunopharmacology Topical ozone therapy restores microbiome diversity in atopic dermatitis. *Int Immunopharmacol.* 2020;80:106191.

[15] Zeng J, Dou J, Gao L et al. International Immunopharmacology Topical ozone therapy restores microbiome diversity in atopic dermatitis. *Int Immunopharmacol.* 2020;80:106191.
Lina TAN, Jian H, Jing LU, Jianyun LU. Clinical efficacy of ozonated oil in the treatment of psoriasis vulgaris [in Chinese]. *Zhong Nan Da Xue Xue Bao Yi Xue Ban.* 2018;43(2):173–178.

[16] Nowicka D. Thermography improves clinical assessment in patients. *Biomed Res Int.* 2017;2017:5842723.
Hassanien M, Rashad S, Ghaly M. Non-invasive oxygen-ozone therapy in treating digital ulcers of patients with systemic sclerosis. *Acta Reumatol Port.* 2018;43(3):210–216.

[17] Huang J, Huang J, Xiang Y et al. Topical ozone therapy: an innovative solution to patients with herpes zoster [in Chinese]. *Zhong Nan Da Xue Xue Bao Yi Xue Ban.* 2018;43(2):168–172.

[18] Kadir K, Syam Y, Yusuf S, Zainuddin M. Ozone therapy on reduction of bacterial colonies and acceleration of diabetic foot ulcer healing. *Home Healthc Now.* 2020;38(4):215–220.
Campanati A, De Blasio S, Giuliano A et al. Topical ozonated oil versus hyaluronic gel for the treatment of partial- to full-thickness second-degree burns: a prospective, comparative, single-blind, non-randomised, controlled clinical trial. *Burns.* 2013;39(6):1178–1183.
Martínez-Sánchez G, Al-Dalain SM, Menéndez S et al. Therapeutic efficacy of ozone in patients with diabetic foot. *Eur J Pharmacol.* 2005;523(1-3):151–161.
Wainstein J, Feldbrin Z, Boaz M, Harman-boehm I. Efficacy of ozone-oxygen therapy for the treatment of diabetic foot ulcers. *Diabetes Technol Ther.* 2011;13(12):1255–1260.
Zhang J, Guan M, Xie C et al. Increased growth factors play a role in wound healing promoted by noninvasive oxygen-ozone therapy in diabetic patients with foot ulcers. *Oxid Med Cell Longev.* 2014;2014:273475.
Solovăstru LG, Stîncanu A, De Ascentii A et al. Randomized, controlled study of innovative spray formulation containing ozonated oil and α-bisabolol in the topical treatment of chronic venous leg ulcers. *Adv Skin Wound Care.* 2015;28(9):406–409.
Izadi M, Kheirjou R, Mohammadpour R. Efficacy of comprehensive ozone therapy in diabetic foot ulcer healing. *Diabetes Metab Syndr.* 2019;13(1):822–825.

[19] Oliveira Modena DA, de Castro Ferreira R, Froes PM, Rocha KC. Ozone Therapy for Dermatological Conditions: A Systematic Review. J Clin Aesthet Dermatol. 2022 May;15(5):65-73. PMID: 35642231; PMCID: PMC9122276.

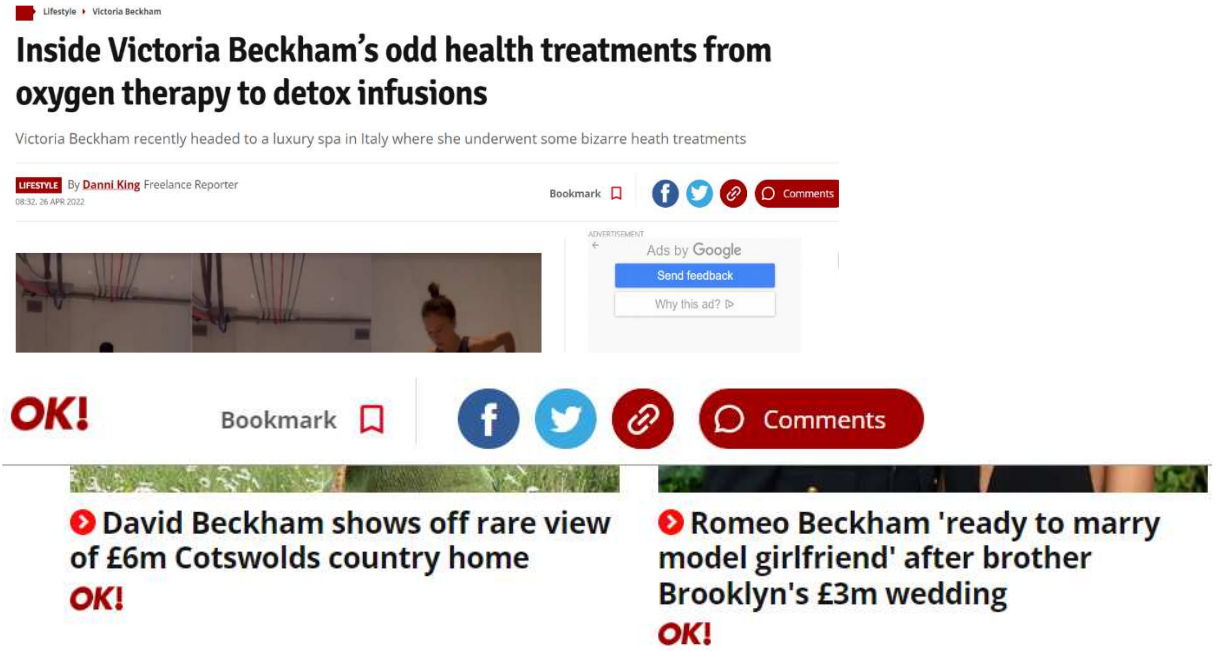
states, enhanced circulation, and the immune system; in systemic sclerosis, it aided in early healing and enhanced joint mobility; for herpes zoster, it significantly reduced duration of the pathological condition; and, for ulcers and scarring, it helped with the repair and regeneration processes, increasing blood circulation and combating bacteria and infectious agents.

Characteristics of the studies in dermatology using ozone[20]

AUTHOR/YEAR	DERMATOLOGICAL CONDITIONS	TYPE OF STUDY	NUMBER OF PATIENTS	GROUP CONTROL	INTERVENTION GROUP
Davatdarova and Kazimov, 2008	Acne	RTC	72	Standard drug treatment	Autohemotherapy and topical ozone
Gloor and Lipphardt, 1976	Acne	Not RTC	16	NA	Topical ozone
Zeng et al., 2020	Dermatitis	RCT split sides	12	Routine care	Ozonated water immersion and topical ozonated oil
Guizhi et al., 2018	Dermatitis	RTC	60	Common water immersion	Ozonated water immersion and topical ozonated oil application
Jianyun et al., 2018	Dermatitis	RCT split sides	12	Common water wash and common oil application	Ozonated water immersion and ozonated camellia oil
Gao et al.,2019	Psoriasis	Not RCT	20	-	Ozonated oil
Lina et al., 2018	Psoriasis	RCT	40	Methone ointment with 0.2 mg/g of flumetasone	Ozonated oil

[20] Ibid.

Celebrity supporters of ozone



Lifestyle ▸ Victoria Beckham

Inside Victoria Beckham's odd health treatments from oxygen therapy to detox infusions

Victoria Beckham recently headed to a luxury spa in Italy where she underwent some bizarre heath treatments

LIFESTYLE By Danni King Freelance Reporter
08:32, 26 APR 2022

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Romeo Beckham 'ready to marry model girlfriend' after brother Brooklyn's £3m wedding
OK!

The 48 year old wrote: "Here are some of the other delicious healthy food and drinks we had - including a strawberry chia seed jelly with avocado and raspberry cream, a green juice and a delicious dinner of dover sole with spinach, artichokes and green beans".

Victoria then underwent ozone oxygen therapy, which she explained is used to "strengthen the immune system", while improving metabolism and sleep, and eliminating "physical and mental fatigue".

She posed for the camera while wearing a gym top, showing off her glowing tan from her recent

DALMER
ozone cosmetics

Products of Dalmer Cosmetics

- Help the skin appear more toned and tight, softens the appearance of fine lines and wrinkles.
- Reduce enlarged pores and uneven texture – Oxygenated with a new look;
- Reduce swollen eyes – They release that tired, crouched and inflated look and reduces the appearance of excess folds, puffiness, under eye bags and dark circle;
- Safely kill bacteria that causes acne;
- Ozone sterilize bacteria in pores reduces pimples, inflammation, redness and prevents future breakouts;
- Promote cell turnoverhis and help in speedy blemishing and reduction of scars or marks. This is because the enhanced localised oxygen supply increases the rate of cell production and regeneration is because the enhanced localised oxygen supply increases the rate of cell production and regeneration;
- Minimize post-inflammatory hyperpigmentation (PIH);
- Increase circulation;
- Oxygenate the skin;
- Promote Elastin and Collagen production. Collagen is responsible for the flexibility, elasticity, and hydration of our skin, whereas elastin ensures the property of resilience in the skin, which makes it return to its original form and shape after getting stretched or pinched.

Massage gel

This product is adjusted so that it is possible to work on the skin for a longer period of time with a minimum amount. Suitable for reflex massages of both body and feet. The antimicrobial effect is enhanced and the skin is well perfused. It can also be used to prevent bedsores and non-healing wounds.

The gel also protects the hands of masseurs and pedicurists. It does not contain alcohol or essential oils. Relief can also be provided to sore joints. Massages thus gain a new quality. It is enough to give a small amount of gel.

Suitable where the skin is rough, horny, cracked, dry, deeply soiled. It is suitable after both dry and wet pedicures.

The cream is also suitable as foot protection when wearing airtight shoes or hands when using rubber gloves. / cleaning lady salesmen, paramedics, humid environment, etc./

The skin will be supple, supple and much less vulnerable.

Basic body balm

It is a basic cream with ozone suitable for the treatment of the whole body. The fast absorption of the cream speeds up the application, just a few strokes. The cream leaves softness and softness on the skin for a long time. An excellent universal travel cream. Suitable even after sunbathing. Its qualities will be appreciated by both women and men.

The cream is also suitable as foot protection when wearing airtight shoes or hands when using rubber gloves. / cleaning lady salesmen, paramedics, humid environment, etc.

Strong body balm

It is based on a base cream, It is further enriched with very important substances. Pinus silvestris oil - pine needle oil, 2 substances from Kadadlovník - Olibanum essential oil, which contributes to a good state of mind and Boswelie oil supporting wound healing and relieves joints.

The balm is suitable for mature skin.

Soaps with ozonated oil

Solid soap and liquid soap. Both soaps are suitable for the whole body and hair. Gentle natural-based cleansing emulsion with ozonated olive oil is strong antimicrobial effect for gentle hygiene. Soothing and moisturizing Aloe seaweed vera helps keep skin healthy. Does not contain dyes. Soaps are also suitable for intimate parties.

Proposed business model

Clause 1 Subject-matter of the Contract

The Exclusive Distributor hereby authorizes the above Company to represent the products of PATRIA INTERNATIONAL s.r.o. in the field of sales and services throughout the Territory (hereinafter referred to as the "Territory").

The REPRESENTATIVE hereby obtains the right to sell products, provide services and organize consumer training regarding Dalmer OZONE products.

The REPRESENTATIVE may sell DALMER OZONATED products outside the Territory subject to the written consent of the Manufacturer.

Clause 2 REPRESENTATIVE´S obligations

The REPRESENTATIVE shall determine the number of its employees necessary for the marketing and technical distribution of DALMER products throughout the Territory. The REPRESENTATIVE shall provide at least one person for sale and one person for services.

The REPRESENTATIVE shall ensure minimum sales of EUR 300,000 in the Territory in the first calendar year, EUR 350,000 in the second year, EUR 400,000 in the third year, EUR 450,000 in the fourth year, and EUR 500,000 in the fifth year.

The REPRESENTATIVE shall monitor actively the legislation relating to the subject-matter in the Territory in order to inform the Exclusive Distributor of changes that have occurred or that are announced in a timely manner.

The REPRESENTATIVE shall place the first order of DALMER products within 30 days from the date of this Contract with a minimum value of EUR 100,000.

In case of termination or expiration of the Contract between the Exclusive Distributor and the REPRESENTATIVE, without renewal of the Contract, for any reason, the REPRESENTATIVE shall terminate all new marketing and sales activities, but shall continue to carry out maintenance and support activities for regular customers for a period of 12 months from the termination of the Contract. During this period, the Exclusive Distributor shall deliver to the REPRESENTATIVE the ordered quantities of DALMER product, if such quantities are needed during this period.

Clause 3 Exclusive Distributor´s Obligations

The Exclusive Distributor guarantees delivery of DALMER products to the REPRESENTATIVE within 30 days of the order being placed by the REPRESENTATIVE. The Exclusive Distributor, together with the Manufacturer, shall continuously improve and modify DALMER products to comply with legal regulations and technical standards, both national and international and the territories.

The Exclusive Distributor shall provide the REPRESENTATIVE with free training, seminars and courses to improve services provided to end customers. The Exclusive Distributor shall provide appropriate training to the REPRESENTATIVE´s staff after the launch of each new DALMER product.

The Exclusive Distributor shall use its best efforts in the area of marketing and sales activities of the REPRESENTATIVE, including all required joint presentations and other sales activities in the Territory as necessary.

The Exclusive Distributor shall keep the REPRESENTATIVE timely informed of marketing strategies and all available marketing materials related to DALMER products in digital form, as well as keep the REPRESENTATIVE informed of all activities related to DALMER products in the marketplace, and shall assist in any way possible to improve marketing initiatives and activities

Clause 4 Prices and Payment Method

The prices and methods of payment for DALMER products between the REPRESENTATIVE and the Exclusive Distributor shall be based on the price list for DALMER products, which is an integral part of this Contract.

The REPRESENTATIVE shall make payment to the Exclusive Distributor on the basis of a receipt provided by the Exclusive Distributor, according to the prices and payment methods set out in advance. Payment shall be made as follows: 50% in advance and the remaining 50% within 7 days after receipt of the confirmation.

As a guarantee of payment, the REPRESENTATIVE shall provide a bank guarantee in its name and in the name of the Director of the REPRESENTATIVE.

The Exclusive Distributor shall approve an additional discount of 3% for each order over EUR 120,000. In cases where the REPRESENTATIVE fulfills the annual plan under Clause 2 hereof, the Exclusive Distributor shall approve an additional **3%** discount.

Clause 5 Delivery and Technical Support

The Exclusive Distributor shall, if necessary, send the appropriate technical personnel for each first delivery of DALMER products to a new customer, who, together with the REPRESENTATIVE's technical personnel, shall provide protection of the interior areas using DALMER products.

The REPRESENTATIVE represents DALMER products in general in terms of marketing, technical support and implementation in its territory.

Contact details

Producer of the Dalmer cosmetics (except soap bar):

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