

Ozone-potential Value in the COVID-19 Pandemic: And Other Preventive Nutraceuticals

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That one holistic, integrative veterinary practitioner and friend Dr. Margo Roman of Massachusetts, one of the pioneers of microbiome restorative therapy in companion animals, has had an attack on her State license to practice for advocating Medical Ozone therapy as a protocol for disinfection of PPE and as a possible cure for coronavirus. Using medical ozone therapy 16 years ago, she successfully treated a cat with an earlier form of coronavirus. All the other infected cats in the same cattery died or were euthanized because they were not given access to her care. See Dr. Roman's review "Ozone therapy: An efficient and cost-effective treatment for infections in animal patients" *Innov Vet Care J* 2021 Volume 11 Issue 1 pp. 29-32 for documentation.

As a veterinarian with doctoral degrees in ethology and medical science from the University of London, England, and with over 45 years consulting with owners about companion animal health and disease prevention via my internationally syndicated newspaper column *Animal Doctor*, I can attest that Dr. Roman has been reading the emerging science and is practicing the One Health initiative that the American Veterinary Medical Association has advocated. The unjust attack on her license to practice has kept valuable educational information from the public.

<https://www.avma.org/resources-tools/one-health>

The SARS-CoV-2 responsible for the COVID 19 pandemic has been called a disease primarily affecting the endothelium. The reticuloendothelial system is a network of cells and tissues found throughout the body, especially in the blood, general connective tissue, spleen, liver, lungs, bone marrow, and lymph nodes. They have both endothelial and reticular attributes and the ability to take up colloidal dye particles. Some of the reticuloendothelial cells found in the blood and in the general connective tissue are unusually large in size. These cells are concerned with blood cell formation and destruction, storage of fatty materials, and metabolism of iron and pigment, and they play a role in inflammation and immunity. Some of the cells are motile—that is, capable of spontaneous motion—and phagocytic—they can ingest and destroy unwanted foreign material. (From <https://medical-dictionary.thefreedictionary.com/reticuloendothelial+system#:>)

This vital internal barrier against infection triggering varying degrees of inflammation and organ damage and failure from lungs and guts to kidneys and brain, like the gut microbiome, plays a significant role in disease and allergy protection, and has been only recently recognized by physicians and veterinarians. This warrants much more research and clinical consideration.

Peter Libby and Thomas Lüscher, who claim in their timely review article that COVID-19 is, in the end, an endothelial disease (*European Heart Journal*, Volume 41, Issue 32, 21 August 2020, Pages 3038–3044, <https://doi.org/10.1093/eurheartj/ehaa623>), summarize their findings in this **Abstract**.

“The vascular endothelium provides the crucial interface between the blood compartment and tissues, and displays a series of remarkable properties that normally maintain homeostasis. This tightly regulated palette of functions includes control of haemostasis, fibrinolysis, vasomotion, inflammation, oxidative stress, vascular permeability, and structure. While these functions participate in the moment-to-moment regulation of the circulation and coordinate many host defence mechanisms, they can also contribute to disease when their usually homeostatic and defensive functions over-reach and turn against the host. SARS-CoV-2, the aetiological agent of COVID-19, causes the current pandemic. It produces protean manifestations ranging from head to toe, wreaking seemingly indiscriminate havoc on multiple organ systems including the lungs,

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heart, brain, kidney, and vasculature. This essay explores the hypothesis that COVID-19, particularly in the later complicated stages, represents an endothelial disease. Cytokines, protein pro-inflammatory mediators, serve as key danger signals that shift endothelial functions from the homeostatic into the defensive mode. The endgame of COVID-19 usually involves a cytokine storm, a phlogistic phenomenon fed by well-understood positive feedback loops that govern cytokine production and overwhelm counter-regulatory mechanisms. The concept of COVID-19 as an endothelial disease provides a unifying pathophysiological picture of this raging infection, and also provides a framework for a rational treatment strategy at a time when we possess an indeed modest evidence base to guide our therapeutic attempts to confront this novel pandemic". See also [A. M. Elvis](#) and [J. S. Ekta](#) Ozone therapy: A clinical review *J Nat Sci Biol Med*. 2011 Jan-Jun; 2(1): 66–70. doi: [10.4103/0976-9668.82319](https://doi.org/10.4103/0976-9668.82319)

Ozone therapy effectively reduced inflammation with effects, at least in part, mediated through reduction of pro-inflammatory cytokines and activation of IL-10 anti-inflammatory cytokine. (Tartari, A.P.S., Moreira, F.F., Pereira, M.C.D.S. *et al.* Anti-inflammatory Effect of Ozone Therapy in an Experimental Model of Rheumatoid Arthritis. *Inflammation* **43**, 985–993 (2020). <https://doi.org/10.1007/s10753-020-01184-2>). Ozone is a complementary therapy applied successfully for long years in treatment of circulatory disorders, cancer, inflammatory diseases and various metabolic diseases and anti-aging. (Bozbas GT, Sendur OF (2016) New Therapeutic Approach in Rheumatoid Arthritis: Ozone. *Int J Physiatry* 2:007. doi.org/10.23937/2572-4215.1510007).

As I posted in my Jan 5th 2021 *Animal Doctor* Column, **COVID-19: A NOT SO SIMPLE PANDEMIC**, the coronavirus associated with this pandemic, some contend, is far less harmful than those promoting vaccinations would have us believe. But there are genetic factors that can make this virus more harmful to some than to others. There are also pre-existing conditions related in part to culture, socio-economics, education, nutrition (notably Vitamin D deficiency and possibly Vitamin C, selenium and magnesium deficiencies), and environmental factors (especially particulate air pollution and poor room ventilation where people gather). This is an issue in schools, places of worship, theaters and sports stadiums. In the latter, and increasingly in people's homes and work places, we have concentrated electropollution. This has been shown to impair the immune and neuroendocrine systems of many animal species subjected to laboratory studies of exposure to the kind of non-ionizing radiation and electromagnetic fields generated by some telecommunication systems. For details see my review Electropollution posted on www.drfoxonehealth.com. All of these factors make any new contagious virus potentially more harmful and there are future emerging viral pandemics on the horizon according to epidemiologists in addition to this mutating and increasingly infectious and lethal SARS-CoV-2.

As a final thought, what is the reason there has been media silence concerning the health benefits of nutraceutical supplements such as selenium, zinc, magnesium, vitamin C vitamin D3 and glutathione that may help reduce the severity of the coronavirus infection responsible for the devastating COVID-19 pandemic?

See Vitamin D3 replacement enhances antigen-specific immunity in older adults [Emma S Chambers](#), [Milica Vukmanovic-Stejic](#), [Carolyn T Turner](#), *Immunotherapy Advances* Volume 1, Issue 1, January 2021, Itaa008, <https://academic.oup.com/immunotherapyadv/advancearticle/doi/10.1093/immadv/Itaa008/5999967>.

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Also, Endogenous Deficiency of Glutathione as the Most Likely Cause of Serious Manifestations and Death in COVID-19 Patients. [Alexey Polonikov](#)*[ACS Infect Dis](#). 2020 May 28 : acsinfecdis.0c00288. Published online 2020 May 28. doi: [10.1021/acsinfecdis.0c00288](#).

L-Cysteine is a precursor of glutathione: See Effects of the Usage of l-Cysteine (l-Cys) on Human Health [Noelia Clemente Plaza](#),¹ [Manuel Reig García-Galbis](#),² and [Rosa María Martínez-Espinosa](#)¹. [Molecules](#). 2018 Mar; 23(3): 575. Published online 2018 Mar 3. [10.3390/molecules23030575](#)
And: Association between regional selenium status and reported outcome of COVID-19 cases in China [Jinsong Zhang](#),¹ [Ethan Will Taylor](#),² [Kate Bennett](#), et al [Am J Clin Nutr](#). 2020 Apr 28 : nqaa095. Published online 2020 Apr 28. doi: [10.1093/ajcn/nqaa095](#)).

"Nascent" iodine being taken orally while various essential oils with anti-viral, expectorant and anti-inflammatory properties inhaled, such as Thyme, Goldenrod, Cedar, Cypress. Myrrh, Frankincense, Peppermint. Lavender, Hyssop and Rosemary should also be considered in treating COVID-19 patients showing early signs of COVID-19 and can be beneficial for treating influenza virus infections, alleviating symptoms and shortening recovery time.

Clinical evaluation of Ozone, intravenous Vit. C and other therapies for infected patients and good nutrition and nutraceuticals to help prevent infection and reduce the severity of infection would be wise at this time considering the vaccine approach to this pandemic may not prove sufficient considering the rate at which this coronavirus can mutate to become more contagious and lethal, and some vaccines may trigger autoantibody production, allergic and other adverse reactions (vaccinosis).

It is on public record in the U.S. that the pharmaceutical industry periodically seeks to have non-prescription/over-the-counter/OTC vitamins and other nutraceutical supplements taken off the shelves and be available by prescription only. Is this to protect the public or vested interests in marketing prescription drugs which are generally more costly and with more potentially harmful side effects?