



THE PHYSIOLOGY OF OXYGENATED WATER

by Dr. Jeff McCombs DC

May 25, 2017

Joseph Priestley, one of the first discoverers of oxygen, once said, ***“Who can tell but that, in time, this pure air may become a fashionable article in luxury.”***

Oxygen. Water. Life. Oxygenated water presents a new paradigm for health, longevity, and sports performance.

In today's world, man is inundated with toxic burdens and stressors that shorten his lifespan and hasten his decline. Generations that should be enjoying longer, healthier, and more productive lives are facing just the opposite. People are living longer but face the prospect of a poorer quality of life, living longer only to suffer more.

How is that the baby boomer generation is the first generation to face a shorter lifespan than any other generation before it, in the midst of the most technologically advanced civilization to occupy the planet? How is it that millennials have a higher rate of disability than any other generation before them? Why is it that diabetes, obesity, Alzheimer's, Parkinson's and practically every other disease are affecting younger and younger age groups?

The environment is in crisis. The majority of the planet's waterways are tainted with toxic chemicals, medications, and radioactivity. Over 140,000 chemicals are added to the planet every year, measured not in pounds, but tonnage. Over 94% of the foods people consume are processed and contain chemicals. Global warming is a threat that continues unabated. It is not the human race that is in decline, it is the entire planet.

A key underlying factor amidst all of this is inflammation. Whether it is stress, chemicals, heavy metals, radioactivity, or just the normal process of living on a planet of immense variables, inflammation increases daily in each individual and underscores advanced aging for everyone. The only solution for man is to match each negative with a positive. We must find a way to decrease inflammation and restore hope and longevity to both man and the planet.

Life is created by a balance between positive and negative forces. The quality of one's life

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

is determined by the sum total between these forces. Unfortunately for the majority of humans, the sum total is balanced on the negative side, creating increases in disease, disability, and death at earlier ages.

The skin is a major interface between man and his environment. The more toxic one's environment, the more toxic and inflamed the skin will be, and therefore, the rest of the body as well.

The skin is the body's largest organ, maintaining important immune and barrier functions, but it is also a major sensory and signaling organ, as well. Through hormones, nerves, and the circulatory system, the skin conveys messages throughout the body. **Whatever we do to the skin, we do to the rest of the body.**

The skin-brain axis is a little-known axis, but has a greater impact than the better known gut-brain axis. The link between the brain, nerves, and the skin is stronger, as they are all derived from the same embryological tissue of the ectoderm. **Whatever we do to the skin, we do to the brain.**

<https://discovery.lifemapsc.com/library/review-of-medical-embryology/chapter-25-germ-layers-and-their-derivatives>

Scientists have repeatedly found that a key link to all diseases is a lack of oxygen to tissues and cells, a state known as hypoxia.

Now, thanks to the Engineers at Ophora Water, man has a viable solution for addressing the rise in inflammatory diseases and conditions: oxygenated water systems.

Water and oxygen are inseparable. Without oxygen, there is no water, no life. Oxygen is vital, fundamental and essential to life on Earth.

The effects of both begin at the cellular level, just as life begins at the cellular level. The use of oxygenated water goes beyond just oxygenating the cells and tissues.

In 2012 and 2013, Canadian researchers demonstrated that soaking in oxygenated water could provide a pathway forward to addressing run-away inflammation and disease.

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

Since water is readily absorbed by the epidermis, it could serve as an effective vehicle for carrying O₂ into the skin if it contained enough dissolved O₂. Water is an effective vehicle for transporting dissolved O₂ across the skin surface and could be used as a basis for development of economical therapeutic approaches that improve skin oxygen tension to support skin health and function.

<https://www.ncbi.nlm.nih.gov/pubmed/22494481>

<https://www.ncbi.nlm.nih.gov/pubmed/23909595>

***The skin has been shown to be a viable pathway for reducing inflammation with oxygen 1% to 2% of the total oxygen consumed at rest is absorbed across the skin surface (Fitzgerald 1957)

For a given surface area (SA) of the skin, the rate (J) and penetration of O₂ into the skin can be altered by widening the O₂ partial pressure differences (P outside -P inside) across the skin surface and (or) by changing the solubility of the stratum corneum. (Water increases the solubility)

Oxygen gas and water have permeation rates of 0.5 umol.cm⁻².h⁻¹ and 11.1 umol.com.⁻².h⁻¹, respectively, through the keratinized cells of the stratum corneum (Scheuplein and Blank 1971). Thus water passes through the stratum corneum more easily than air.

Bulk transfer of water into the epidermis occurs directly across the stratum corneum and by way of the sweat ducts and hair follicles in the skin (Scheuplein 1967).

***Oxygen therapy is gene therapy -

It has already been demonstrated that Hyperbaric Oxygen Treatment (HBOT) is a well-established oxygen therapy demonstrating the benefits of oxygen treatment.

Hyperbaric oxygen therapy exerts its wound-healing effects by expression and suppression of thousands of genes. The dominant gene actions are upregulation of trophic and anti-inflammatory genes and down-regulation of pro-inflammatory and apoptotic genes. As

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

many as 8101 genes were either up-or down-regulated over 24 h after a single exposure to HBOT, (upregulated genes were primarily growth and repair hormone and the anti-inflammatory genes; downregulated genes were the pro-inflammatory and apoptotic genes)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4499900/>

Through oxygen therapy, we can positively affect over 8100 genes in the body that turn down inflammation and cancer, and increase anti-oxidants and inflammatory diseases.

However, HBOT cannot penetrate the surface of the skin to deliver oxygen directly to the tissues -

http://mobile.journals.lww.com/plasreconsurg/Citation/1971/04000/Skin_permeability_to_oxygen_and_hyperbaric_oxygen_.62.aspx

Only oxygenated water overcomes this limitation, bringing health, regeneration and longevity with it.

Supporting studies ~

***The pathway from skin to brain can increase brain inflammation when the skin is inflamed. This logically infers that reducing skin inflammation can turn down brain inflammation

In summary, this study shows that peripheral, tissue-specific skin inflammation can remotely induce both transcriptional and functional responses in the brain, and it implicates inflammatory chemokines as potential mediators of the brain response to peripheral inflammation. This study has provided a comprehensive characterisation of the peripherally triggered, infiltrating leukocytes in the brain, which have the potential to exert a profound effect on CNS homeostasis. Our findings highlight the sensitivity of the CNS to peripheral changes and offer a correlative insight into how chronic inflammatory diseases are commonly associated with the onset of neuropsychiatric co-morbidities.

<https://jneuroinflammation.biomedcentral.com/articles/10.1186/s12974-016-0562-2>

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

Peripheral inflammation is also capable of producing cognitive dysfunction [Buchanan et al. 2008;

Tonelli and Postolache, 2005; Reichenberg et al. 2001] and markers of inflammation, such as peripheral cytokines, have been associated with lower cognitive performance [Hilsabeck et al. 2010; Rothenburg et al. 2010; Gimeno et al. 2008; Rafnsson et al. 2007].

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3513880/>

The body's ability to deliver oxygen to the tissue is dependent on 1) oxygen uptake in the respiratory system, 2) the oxygen transport/capacity of the blood and 3) the general status of the circulatory system.

Any impairment of the organism's ability to deliver oxygen to the tissue will be revealed immediately since the skin is ranked very low in the body's system of oxygenation priority.

***Oxygenated water bypasses the body's usual methods of oxygenating the skin and delivers oxygen directly into the skin.

At one time on the planet, the oxygen content was as high as 30 -35%. Current levels hover around 20-21%, but in most cities the levels are even lower as oxygen is displaced by chemical pollutants, gases, and particles.

Over half of Americans live in counties where the air is unhealthy for them to breathe.

<http://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2016-full.pdf>

The researchers report that, between 2000 and 2010, squamous cell carcinoma (also called cutaneous squamous cell carcinoma) diagnoses increased 263 percent, and basal cell carcinomas increased 145 percent

<https://www.sciencedaily.com/releases/2017/05/170515141000.htm>

Cancers can only develop if the biochemical circuits that control cell proliferation and behavior are inactivated. These safe-guarding mechanisms are mediated by so-called tumor-suppressor proteins, one of which is known as p53....He and his colleagues have now

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

shown that, in tumor cells in which the p53 function is compromised, complete loss of miR-34a expression is a direct consequence of hypoxia. In response to low oxygen levels, the tumor cells trigger the synthesis of hypoxia-inducible factor 1a (HIF1a), a protein that directly represses the transcription of miR-34a. Furthermore, this down-regulation of the microRNA is a prerequisite for hypoxia-induced epithelial-to-mesenchymal transition (EMT). In this process, HIF1a activates a genetic program that results in the transformation of non-invasive cells (which grow in a regulated fashion in epithelial sheets) into invasive, migratory cells that can seed new tumors elsewhere.

<https://www.sciencedaily.com/releases/2017/05/170511113523.htm>

In colorectal tumors, hypoxia causes resistance to therapy and promotes metastasis. Loss of the tumor suppressor p53 (encoded by TP53) provides cancer cells with a selective advantage under conditions of hypoxia,...

<https://www.ncbi.nlm.nih.gov/pubmed/28435028>

Most people residing in major cities live in a hypoxic hell, as pollution levels are continuously high enough to increase disease and death rates and create states of advanced aging.

The primary effect of toxins is that they create inflammation, often by creating reactive oxygen species (ROS).

Skin exposure to ionizing and UV radiation and/or xenobiotics/drugs generates ROS in excessive quantities that quickly overwhelm tissue antioxidants and other oxidant-degrading pathways.

Uncontrolled release of ROS is involved in the pathogenesis of a number of human skin disorders including cutaneous neoplasia (Briganti and Picardo, 2003; Black, 2004b). The agents that produce oxidative stress in skin include gaseous airborne environmental pollutants generated by automobile and other industrial sources, UV radiation, food

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

contaminants/additives/preservatives, cosmetic products, drugs, etc. (Athar, 2002). In addition, heme pathway intermediates may have pro-oxidant effects, whereas heme oxygenase, an enzyme that degrades heme, can function as both an antioxidant and a pro-oxidant (Ryter and Tyrrell, 2000). Many of these agents may intrinsically generate ROS or their metabolites such as redox active quinones several of which may be involved in the pathogenesis of multiple skin disorders/allergic reactions/neoplasms (Briganti and Picardo, 2003; Black, 2004b; Sander et al., 2004).

We and others have also shown that exposure of skin to a number of chemical and physical environmental agents induces oxidative stress leading to induction of cutaneous lipid peroxidation with concomitant modulation in the levels of antioxidant and drug-metabolizing enzymes (Bickers et al., 1982; Das et al., 1985; Connor and Wheeler, 1987). In later studies, it was demonstrated that ROS induce a number of transcription factors such as activator protein 1 (AP-1) and NF- κ B (Dhar et al., 2002).

Recently, Reelfs et al. (2004) have shown that UVA irradiation of skin fibroblast releases labile iron, which is involved in the activation of NF- κ B (Reelfs et al., 2004). In addition, the mitogen-activated protein kinase (MAPK) pathway is a target of oxidative stress (Kim AL et al., 2005).

[http://www.jidonline.org/article/S0022-202X\(15\)32735-4/fulltext](http://www.jidonline.org/article/S0022-202X(15)32735-4/fulltext)

“Our findings demonstrate that HBO attenuated CCI-induced rat neuropathic pain and inflammatory responses, possibly through regulation of the Kindlin-1/Wnt-10a signaling pathway.”

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5216011/>

“These results indicate that HBO improves ischemic wound healing by downregulation of HIF-1 α and subsequent target gene expression with attenuation of cell apoptosis and reduction of inflammation.”

<https://www.ncbi.nlm.nih.gov/pubmed/18337831>

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com



THE PHYSIOLOGY OF OXYGENATED WATER

“...oxygen treatment was clearly beneficial in attenuating the inflammatory response..”

[http://www.journalofsurgicalresearch.com/article/S0022-4804\(12\)00057-1/abstract](http://www.journalofsurgicalresearch.com/article/S0022-4804(12)00057-1/abstract)

Ischemic stroke is characterized by the interruption of blood flow and oxygen to brain tissues [1]...It indicated that HBO treatment would reduce MPO expression, representing with attenuating acute inflammation. Longer and repetitive HBO therapy seemed to have a greater effect in attenuating inflammation.

<https://www.hindawi.com/journals/mi/2013/512978/>

<http://cancer.ucsf.edu/news/2016/07/07/covert-inflammation-may-trigger-many-forms-of-cancer.7743>

<http://onlinelibrary.wiley.com/doi/10.1111/j.1755-3768.2012.3242.x/full>

<https://caliscc.org/component/easyblog/homeostatic-renormalization-of-hair-skin-tissue-using-adult-stem-cell-s2rm-technology.html?Itemid=101>

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0134394>

<http://gradworks.umi.com/35/82/3582155.html>

Inflammation causes a loss of nutrients in the skin, which then perpetuates more inflammation.

Chronic inflammation leads to Se deficiency, which intensifies the persistence of the inflammatory condition and, by creating a vicious cycle, promotes the manifestation of disease.

<http://www.touchendocrinology.com/articles/selenium-and-inflammation-potential-use-and-future-perspectives/page/2/0>

Oxygen rejuvenates and renews the skin Oxygen recently has been found to be an important component in skin rejuvenation, treatment of photoaging skin, and improvement in skin complexions.

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3977684/>

While acute inflammation plays a vital role in the healing processes of the body, it is chronic inflammation that is a destructive hallmark of life for most people. With over 63% of Americans living in cities, exposures to pro-inflammatory toxins is an unavoidable consequence of life. Acknowledging this as a fact of life allows us to move forward in seeking out viable solutions.

Oxygenated water systems provide us with a proven way forward to decrease inflammation locally and systemically throughout the body and counter the effects of low-oxygen (hypoxic) states.

It is imperative that inflammation be reduced to improve health outcomes, prolong life, attenuate disease, and ward off death. Oxygenated water is a viable therapy for reducing inflammation and improving inflammation profiles.

Enhance improves athletic performance –

Your body starts at your highest level of blood oxygen (95-97%) and expends oxygen as you exercise. An athlete will produce his or her highest level of performance until that oxygen level becomes depleted and they become fatigued and need to stop and re-oxygenate (catch their breath). Starting at a higher level (100% blood oxygen) will prolong the time that an athlete can maintain their highest performance level.

You can:

- Shave seconds off timed running, biking, swimming etc.
- Make cognitive decisions at a quicker and more accurate rate
- Prevent fatigue for longer than typically possible
- Provide relief from high altitude sickness
- Increase energy without caffeine, sugar and chemicals found in energy drinks

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com





THE PHYSIOLOGY OF OXYGENATED WATER

Overview:

- Oxygen therapy is gene therapy
- Oxygenated water penetrates the skin better than HBOT
- Oxygenated water bypasses the body's methods of oxygenating the skin and delivers oxygen directly into the skin and tissues.
- The skin has been shown to be a viable pathway for reducing inflammation with oxygen
- The pathway from skin to brain can increase brain inflammation when the skin is inflamed, thus reducing skin inflammation can turn down brain inflammation
- Low oxygen (hypoxic) states are associated with increased rates of cancer and metastasis
- Oxygen rejuvenates and renews the skin
- Oxygen preserves important nutrients in the skin to help prevent inflammation
- Oxygen improves athletic performance

Ophora Water Technologies
(805) 560-0445 or (866) 928-7247
www.ophorawater.com
info@ophorawater.com

