Millennium TBI Network
Rebuilding Hope one day at a time.

The Emerging Science of Coronavirus Defense

The Covid-19 Paradox

By

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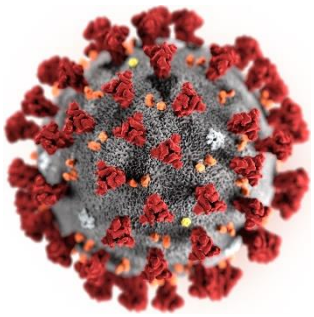

The sudden appearance in China of the novel coronavirus, now identified as Covid-19, has rapidly spread around the globe with a relatively small but rising death toll. Death from the infection is due to SARS, a severe acute respiratory syndrome, that effects the lungs ability to transport oxygen to our red blood cells. Contrasted to the annual fatalities from Influenza A, Covid-19 has presently paled in the total number of deaths in comparison.

We would like to believe that this is due to the rapid response by our government in identifying the location of origin, Wuhan China, but has not found Patient Zero (the index case or the first person to acquire the illness) which would help identified the originating source of the virus. Speculation exists that claim the Covid-19 virus was manufactured or that the virus jumped from animal to man, these are just that – speculations.

In the recent past, an epidemic with SARS (a coronavirus infection) originated in Guangdong China in 2003, resulted in more than 8000 cases in 26 countries with 774 deaths. Since then, a small number of cases have occurred as a result of laboratory accidents or, possibly, through animal-to-human transmission according to the WHO.[1]

Now, we know what we are dealing with a virus, and the question becomes how best to protect ourselves from becoming infected with the virus. With that question asked, we need to take a short course in virology to understand how we might be able to protect ourselves and our loved ones.

How Viruses infect our cells

Viruses are a unique adversary to human wellness since they need to utilize our own cells' systems to replicate their genome. Once the virus injects its RNA (ribose nucleic acid) into our cell, it utilizes our protein manufacturing centers called ribosomes to recreate and multiply this protein which is called Replicase (RNA dependent RNA polymerase)[8]. It is Replicase that directs our cells to continue to manufacture the viral genome and structural proteins[2]. The coronavirus replication cycle is divided into several steps: attachment and entry, translation of viral replicase, genome transcription and replication, translation of structural proteins, and virion assembly and release[9].

Therefore, the question is how best to stop this process? Enter zinc, which has been found to inhibit the production of Replicase[3]. Without replicase there cannot be replication of the viral genome, but there is a problem with getting zinc into the cell. Zinc is a mineral that has an electric charge making it an ion; an atom or molecule with a net electric charge; zinc has a plus 2 charge (ZN^{+2}). Due to this electric charge, zinc cannot easily cross the cell membrane and enter the cell to stop the replicase production.

The Ionophore Carrier

The membranous outer surface of our cells is a bi-lipid layer that controls the entrance as well as exit of compounds in and out of our cells. Some compounds pass easily into the cell while others cannot transverse the membrane due to their size or an electrical charge. The presence of an electric charge impedes their passage through the bi-lipid cell membrane and mandates that they be chaperoned or carried into the cell by a substance called an Ionophore.

Ionophore means "ion carrier" and represents a diverse group of compounds that catalyze ion transport across hydrophobic membranes such as those making up our cells. These carrier ionophores may be proteins or other molecules, pharmaceuticals or nutraceuticals.

In order to get these compounds from the outside of the cell to the inside, a virtual transmembrane channel is needed.[4] These highly selective transmembrane passageways allow for the transport of charged particles, ions, into the cell, but they need a carrier or transport molecule to facilitate their passage. Without a transporter, the product to be delivered is stuck on the outside of the cell membrane never to gain entrance.

Fortunately, zinc has been found to be transported into the cell by a number of medications and natural products or nutraceuticals. Presently, the anti-malarial medication Chloroquine, has been found to be an ionophoric transporter of zinc. In the coming days more information will come out about this medication with potential side-effects. In the nutraceutical realm both Quercetin and Epigallocatechin gallate (**EGCG**) are capable of ionotropic transport of zinc[5] into the cell without toxic side-effects.

The three types of **zinc** supplements most easily **absorbed** by the body which are **zinc** picolinate, **zinc** acetate, and **zinc** citrate. Once the zinc is absorbed through the intestinal lining into the blood stream it becomes the responsibility of either the EGCG or Quercetin[6] to act as the ionophore transporter to get it into the cell. Once Zinc is in the cell it can address the disruption of the viral replication mechanism by inhibiting replicase's production.

Based upon this science, it appears if the combination of Quercetin[7], EGCG, and Zinc are taken pre-infection the cells are prepared for the attempted invasion of the viral genetic material into our cells. If you have not prepared your cells, the only benefits will be in curtailing the further replication of the viral particles if the virus has already gained a foothold in your cells and is using your ribosomal-protein synthesis mechanism to make more virus. As always, an ounce of prevention goes a long way.

Watch the video under reference #2 on page 3.

Click to References.

Suggested order of viewing: #2 and #3 to learn about viral replication, Zinc, and ionophore transport. Then #5 to understand how both safe and beneficial the nutraceuticals Quercetin and EGCG are as Ionophore carriers followed with # 6 and #7 the existence of science since 2003 about the benefits of Quercetin on stopping the cellular infection by Coronavirus and Ebola. To amplify the information then go to #4, #8, and the intense #9.

Over-view
I believe that the point of convergence, for all this information, will be that Quercetin acts as an ionophore to carry zinc into the cell to inhibit viral genomic replication.

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Comments:
Since 2001, the Millennium has used Zinc as an aromatase inhibitor in lieu of the poisonous anastrozole. The standard dosing of the Zinc Citrate was 60 – 90 mg a day. After reading about the Mitochondriogenic effects of Quercetin in 2006 we started adding 500mg twice a day to our professional athletes to improve their endurance and recovery. We also learned that Quercetin, a polyphenolic natural derivative, also modulates the inflammatory cytokines thereby decreasing inflammation. In 2019, we released Brain Care II, a liposomal product, to deliver 6 anti-inflammatory products into the body to address the neuroinflammation generated by traumatic and non-traumatic brain injuries in our veterans. This product contains both Quercetin and EGCG, both Ionophores.

What we have observed in our patient population, based upon their monthly program questionnaires (MPQs), is a reduction in the occurrence, intensity and duration of the common annual influenzas and colds. Coincidental or science? As you will read, Dr. Michel Chrétien's team has already shown with SARS (2003) and Ebola that Quercetin has altered the ability of these Viral Vectors to gain a foothold. Could it be that individuals with an optimal level of zinc who are also on Quercetin stand a better chance at defending their cells from the viral incursion? Only with further research will this be proven but the groundwork, as shared above, is already underway.

Expect to see a surge in reports about Chloroquine treatments and research in the coming hours, days and weeks.

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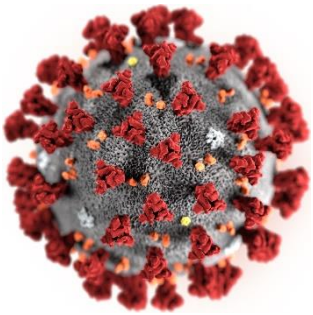
April 9, 2020 **V6.0**



A virus is a unique invader of the human body superimposing its system of replication over ours to generate more viral genome that can infect every cell as well as be transmitted to others. Once the virus injects its RNA (ribose nucleic acid) into our cell, it utilizes our own protein manufacturing centers called ribosomes to duplicate a protein called ***replicase*** (RNA dependent RNA polymerase)[1,2]. It is replicase that directs our cells to manufacture the viral genome and its structural proteins[3]. The coronavirus' replication cycle is divided into several steps similar to other viruses: attachment and entry, translation of viral replicase, genome transcription and replication, translation of structural proteins, and virion assembly and release[4].

Treatment Options

Now the question is what is the best way to stop this process and the coronavirus or any virus? Classically, a vaccine would be produced from one or more specific portions of the virus' structural proteins. When this is injected as a vaccine, it stimulates our immune system to produce antibodies against the virus helping the immune system to identify and kill it. As of April 5, 2020, nineteen companies[5] are working on developing this vaccine with Gilead Sciences Inc. and Moderna Inc. at the forefront. Unfortunately, according to Dr. Anthony Fauci and his colleagues, they believe that it might take a year or more before we have a safe and effective vaccine[6]. So now, what other options are available until "the vaccine" is deliverable? This is where the story really begins, but we will need a little background.

Early in March 2020, news articles emanating from a number of French institutes touted the beneficial effects of an anti-malarial medication called Hydroxychloroquine against the coronavirus. This was immediately met with press stating, "Hyped anti-malarial drug ineffective". Presently the ongoing clinical results from France's University Hospital, Angers, is showing promise[7,8].

Hydroxychloroquine (HC) has been identified as one of a handful of pharmaceuticals that has the ability to carry charged particles, or ions, into cells. Chemicals with this characteristic function are referred to as an ionophore[9,10]. Unfortunately, hydroxychloroquine has a few side-effects that can make it harmful to some like; alteration of cardiac electrical condition, and retina damage[11,12]. On Thursday April 9, the preliminary French study reported 91% efficacy from hydroxychloroquine and azithromycin without the anticipated side-effects. The lead physician, Didier Raoult has complained about the "dictatorship of the methodologists" who insist on randomization and control groups in clinical trials while he believes in applying the science[13]. (see comments below; **The Dogma of the Scientific Method**.)

How does the Zinc - Ionophore Complex work?

The outer surface of our cell is a bi-lipid membranous layer that controls the entrance as well as exit of compounds in and out of our cells. Some compounds pass easily into the cell while others cannot transverse the membrane due to their size or the presence of an electrical charge. When an electric charge is present that compound needs to be chaperoned or carried into the cell by a substance called an Ionophore. Ionophore means "ion carrier" and represents a diverse group of compounds that catalyze ion transport across hydrophobic membranes such as those making up our cells. These carrier-ionophores may be proteins or other molecules, pharmaceuticals or nutraceuticals. Without a transporter, the product will be stuck on the outside of the cell membrane never to gain entrance.

Zinc is a mineral that has an electric charge making it an ion (ZN^{+2}) thereby, limiting its ability to enter the cell. Fortunately, once zinc is absorbed through the intestinal lining and into the blood stream it becomes the responsibility of the ionophore transporter to get zinc into the cell. Once zinc is in the cell it can address the disruption of the viral replication mechanism by inhibiting **replicase**'s production[20].

Zinc has been found to inhibit other virus's RNA polymerase activity including arterivirus, rhinovirus (common cold), and hepatitis C virus[14]. The three types of **zinc** supplements most easily **absorbed** by the body are **zinc** picolinate, **zinc** acetate, and **zinc** citrate.

Besides hydroxychloroquine, there are a number of safe and effective nutraceutical ionophores like Quercetin[15,21,22,23], EGCG[15], Curcumin, and Bismuth that can be used instead of Hydroxychloroquine without the potential risks of side-effects and the need for a prescription.

Based upon this science, it appears if the combination of Quercetin[23], EGCG, and Zinc are taken pre-infection the cells are prepared for the attempted invasion of the viral genetic material into our cells. If you have not prepared your cells, the only benefits will be in curtailing the further replication of the viral particles if the virus has already gained a foothold in your cells and is using your ribosomal-protein synthesis mechanism to make more virus. As always, an ounce of prevention goes a long way.

Vitamin D

Adding to the mix is Vitamin D, long thought of as only helping maintain strong bones. What we have found is that it is a pleiotropic hormone (seco-hormone) that influences inflammatory cytokines, as well as stimulates our immune system, among many more documented functions. In terms of the Coronavirus, the real benefit might be in the ability of Vitamin D to diminish the dumping of inflammatory cytokines – Cytokine Storm[25] – into the lungs that creates the scenario for respiratory assistance with a respirator[17,23]. A number of articles are stating 10,000iu (250mcg) a day for protection.

Comments:

The Dogma of the Scientific Method.

In extenuating circumstances, I believe that there is a need to put the scientific dogma aside for the good of the people. Hydroxychloroquine has been on the market for more than 50 years and has proven itself as an effective medication for malaria and lupus with some potential risk factors in a small population of patients. The use of hydroxychloroquine has received negative publicity as an "unproven" treatment for coronavirus. The preliminary clinical trials in France are showing a significant benefit over placebo. Additionally, during the 30 years that I have practiced medicine I have seen "proven" medications being removed from our medical armory because they failed to work or causes significant harm to the patients when put into use. Should these issues have been affirmed during the so called "scientific methodology" of clinical assessment in Phase II of a proposed pharmaceutical product?

Additionally, the use of Zinc and one or more of its ionophoric carriers such as Quercetin, EGCG, Curcumin and Bismuth have been overlooked as an alternative to hydroxychloroquine. The president promoted on April 8th the use of Zinc in conjunction with azithromycin while the ideal preventative and possible treatment cocktail, based upon scientific research that already exists is Quercetin and Zinc to stop replicase. Furthermore, Dr. Michel Chrétien's of McGill University in Montreal has already shown the benefits of Quercetin alone against SARS and Ebola since 2003. Apparently, Dr. Chrétien is presently in China providing his Quercetin protocol to large numbers of coronavirus infected individuals.

Anecdotally, over the past 19 years, patients treated with the Millennium-TBI protocol's have recorded on their monthly progress reports diminished frequency, intensity and duration of annual viral infections, if they get one. Their protocols have included Quercetin, Zinc, and EGCG. The majority of the clients have been on Quercetin 500mg twice a day with Zinc 30mg twice a day.

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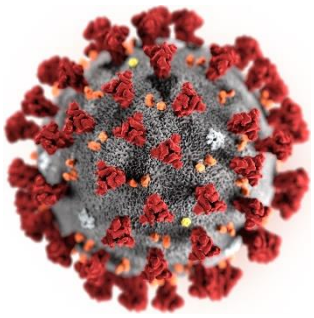
April 19, 2020 V7.0

Non-Traumatic Brain Injury or Viral Encephalopathy



Well it was anticipated and just a matter of time before the reports started appearing about the neurological impact of Covid-19 on the brain. Those of you who have been following my work on traumatic and non-traumatic brain injuries[1] are now going to be witnessing the rise of neuropsychiatric conditions in association with the coronavirus. This is the non-traumatic form of brain injury being precipitated by Covid-19 that induces a massive release of inflammatory cytokines being referred to as "Cytokine Storm" or actually Autoimmune Encephalitis[2]. This is being exacerbated by a secondary viral infection of the brain or Viral Encephalitis[3].

Dr. Jennifer Frontera, a neurologist at NYU Langone Brooklyn hospital is seeing coronavirus patients with impact on the brain and nervous system. Additionally, Dr. Frontera's team is documenting cases including seizures in COVID-19 patients with no prior history of epilepsy, and "unique" new patterns of tiny brain hemorrhages[4]. In some cases, significant damage to the white matter of the brain is seen causing varied degrees of brain damage[5]. A study published in the Journal of the American Medical Association last week found 36.4 percent of 214 Chinese patients had neurological symptoms ranging from loss of smell and nerve pain, to seizures and strokes[6]. A paper in the New England Journal of Medicine this week examining 58 patients in Strasbourg, France found that more than half were confused or agitated, with brain imaging suggesting inflammation[7].

"We're seeing a lot of consults of patients presenting in confusional states," Dr. Rohan Arora, a neurologist at the Long Island Jewish Forest Hills hospital told AFP, saying that more than 40 percent of recovered Covid-19 patients exhibit altered levels of consciousness[8].

As in our veterans exposed to a spectrum of battle injuries, sports professionals on the field of play getting their "bell rung", and civilians living and enjoying life to the fullest, there are moments of injury that are negated because they did not cause loss of consciousness, amnesia, or nausea/vomiting, but initiated a process of neuroinflammation. Neuroinflammation can be acute being associated with or without short-term neurological, cognitive, and neurobehavioral disorders[9,10] or long-term with chronic symptomatology. As long as there is inflammation, there are Cytokines.

The Mechanisms of Damage

There are three major pathways that a virus, such as the Covid-19, can lead to neurological involvement of the brain with alterations in psychological, physiological, and physical functioning. The first, is the response of the body's immune system directed against the invading Coronavirus. As has been seen in the elderly, those with a compromised immune systems, diabetes, multiple medical conditions and medication, there is a hyperbolic response of the immune system leading to a "Cytokine Storm" throughout the body with the greatest impact on the respiratory system[11]. It is a rapid process in many compromised individuals, moderate in some, mild in others, and in the fortunate without a missed beat. As the ability of our lungs to take in oxygen and expel carbon dioxide fails, a condition known as hypoxia looms. As hypoxia worsens, the lack of oxygen in the brain causes a loss of Fractalkine, a Chemokine that lowers the brains' production of cytokines from the Microglia cells[5,12]. Loss of Fractalkine allows for brain derived cytokines to be released in another "Cytokine Storm"[13].

A second pathway is derived from damage to the blood brain barrier (BBB) that protects the brain from products or infections circulating below the neck. Disruption of the BBB by the presence of elevating levels of cytokines[14] produced below the neck along with those being produced by the glial cells of the brain, allows for the passage of Covid-19 into the brain to initiate a viral encephopathy[15].

The third pathway is a cumulative effect of cytokines on the molecular chemistry of the brain. Neuroinflammation leads to elevation in ROS/RNS causing a rise in the level of oxidative stress (oxidative load) which impedes the normal biochemical processes required for cell-to-cell communication[16]. This can be clinically observed as a change in level of consciousness, cognition, and neuropsychobehavior[17].

As you can see from these three key pathways, they overlap in their ability to create a non-neuropermissive environment leading to the loss of neuronal and lobar functioning. If left unchecked, the ultimate effect of Covid-19 on those surviving will be a population of individuals with diminished mental and physical capacity to live independently and without medication; a scenario we see consistently at initiation of treatment with our Veteran Heroes.

Treatment

The Millennium-TBI Project has been addressing the neuroinflammation generated by traumatic and non-traumatic injuries with nutraceutical products such as eicosanoids[18], tocopherols[19], NAC[20], melatonin[21], quercetin[22], and EGCG[23], all showing their ability to lower the production of inflammatory cytokines while protecting neurons and glial cells from oxidative stress.

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Pandemic-associated Psychological Distress

Under the influence of psychological stressors there is a spontaneous increase in microglial production of inflammatory cytokines such as IL-1, IL-1B, IL-6 and TNF-alpha. This is brought about by the downregulation of the chemokine, Fractalkine, by cortisol and corticotropin stimulating hormone. Without Fractalkine, its microglial receptors are vacant and the transcriptional trigger for inflammatory cytokines, NF-kB, is set in motion with the production of cytokines. Modulation of NF-kB's ability to initiate translation of the cytokines is the focus of the nutraceutical components of the product Brain Care II. Available on Amazon while supplies last.