**Strengthening your Personal Immunity in Light of the Current Viral Challenges**

**Overview by Dr. Karl Maret, March 2020**

**Disclaimer**: The information presented here is for informational and research purposes only and is not a substitute for getting appropriate medical care from a licensed practitioner. We expressly deny that the information being provided is intended to assist in the cure, diagnosis, prevention, or treatment of coronavirus-related diseases, including but not limited to COVID-19, MERS, or SARS. Since the current pandemic of Covid-19 is still developing in many countries, the information in this article is in no way to be considered to specifically prevent, mitigate, or treat coronavirus-related illnesses. Furthermore, this information has not been evaluated by the FDA or other conventional medical authorities.

**Basic Background on Covid-19**

The current pandemic of this corona virus-related respiratory illness appears to especially target the older population especially those aged older than 50, with those having predisposing medical conditions showing the highest morbidity and mortality. There have been no reports of deaths in children aged 0-9 years of age. The median age for those infected is around 50 years old, with a slightly higher incidence in men. Children appear less vulnerable to infection and appear to have milder symptoms than adults. Pregnant women do not appear to be at higher risk than the general population. Currently there has been a general shortage of sufficient testing kits to confirm the Covid-19 diagnosis and many efforts are taken at local, state and national levels to contain the spread of the virus. A strain of corona virus was also involved the 2003 SARS epidemic which was contained much earlier than the current Covid-19 pandemic.

**Common symptoms of those who contract the Virus**

The majority of infected people present with mild cold-like symptoms and fever. There are even case reports of asymptomatic carriers. Mild symptoms include: fever, muscle aches, uncomplicated upper respiratory symptoms (cough, sore throat, nasal congestion, headaches). Patients who experience more severe symptoms often have: difficulty breathing and mild to severe pneumonia. Death may be due to severe pneumonia, acute respiratory distress syndrome (ARDS), and sepsis or septic shock. Authorities have estimated a fatality rate of no more than 1-2%, about 10 to 20 times higher than death from the more common seasonal flu. This means that 98-99% of individuals who contract this corona virus will recover. Because corona virus incidence is still being assessed, several doctors write that the actual rate of fatalities may actually be less.

**Strengthening Your Personal Immunity**

Natural Agents including vitamins, herbs, medicinal mushroom have been used by the public, as recommended by doctors and CAM (Complementary and Alternative Medicine) professionals, with great efficacy and safety for many decades. There are growing numbers of scientific studies showing their promise in strengthening the immune system. At present, we do not have any specific evidence of protection or treatment of Covid-19 with any natural agent or drug. Further, many scientific studies on natural immune strengthening substances have primarily been conducted on human cell lines or in animal studies, and not in-vivo human clinical trials. Human clinical trials of any sort are expensive and of little interest to the pharmaceutical industry if they cannot patent what they test, such as vitamins or natural substances. Below is a list of some helpful nutrients to consider with scientific evidence to strengthen your immune system.

**Vitamin D** is a key to preventing acute respiratory tract infection. A 2017 British Medical Journal meta-analysis of 10,993 subjects (a large double blind, placebo controlled study) concluded that Vitamin D supplementation was safe and it protected against acute respiratory tract infection overall. Patients who were vitamin D deficient, as well as those that took vitamin D daily or weekly, experienced the most benefit. It would be helpful for each person to know their Vitamin D3 blood level, which can easily be checked at most labs. Common reference ranges for adequate blood Vitamin D3 levels is given as greater than 30 ng/ml, although it is more optimal to be between 50 – 80 ng/ml (1). Another study published in 2015 showed that Vitamin D deficiency is common in people who develop acute respiratory distress syndrome (ARDS). This deficiency of vitamin D appears to contribute to the development of the condition, and approaches to correct vitamin D deficiency in patients at risk of ARDS should be developed (2).

**Medicinal Mushrooms** have been extensively researched for their immune boosting potential and a medical database is now available, including references on PubMed (3). Although there are many nutritious and medicinal mushrooms, the most promising medicinal mushrooms are Chaga (Inonotus Obliquus), Red Reishi (Ganoderma lucidum), Turkey Tail (Trametes versicolor), Shitake (Lentinula edodes), Poria (Wolfiporia cocos). All these are all contained in formulations by master herbalists. Other widely used mushrooms include Royal Sun Agaricus (Agaricus blazei), Cordyceps (C. sinensis), and Maitake (Grifola frondosa). Chaga, the polypore mushroom that typically grows on Birch trees in the far north, has been used for 400 years by native Siberians and has many ingredients including antioxidants and antiviral components. Making a tea of Chaga and/or other mushrooms, as is traditionally done in Siberia and other Asian regions, is a good way to start (4). Mycologist Paul Stamets has been at the forefront of research into the benefits of medicinal mushrooms in translational medicine showing their immune stimulating benefits (5,6).

**Vitamin C** has a long history of successful use in medicine and is especially used in higher doses in orthomolecular medicine. Unfortunately there appears to be an unwarranted bias against use of Vitamin C in viral infections by many medical practitioners. One early pioneer was Frederick Klenner MD from Columbia University who used Vitamin C extensively for various viral disease with excellent efficacy in higher daily doses (7, 8, 9,10). The late Robert Cathcart MD was a world-renowned pioneer of high dose Vitamin C for the treatment of many conditions including Pneumocystis Carinii pneumonia in AIDS patients (11). An extensive review of the benefits of Vitamin C related to influenza viruses was described by already by Nobel laureate Linus Pauling published in 1986 (12). Already in 1980, R. Anderson group at the Immunology Section, Department Microbiology, at the University of Pretoria in South Africa found that increasing weekly doses of ascorbate positively affected cellular and humoral immune functions in normal volunteers (13). Bendich et al reviewing the scientific literature in 1995 found that higher than RDA intakes of vitamin C have been associated with several indices of lowered cardiovascular disease risk including increases in HDL, and decreases in LDL oxidation, blood pressure and cardiovascular mortality (14). In 2013, the Cochrane Collaborative did a systematic review of Vitamin C for preventing and treating the common cold and found that lessened the duration of the common cold (also caused by a corona virus) in both adults and children (15). More recent studies found Vitamin C helpful in treating Epstein Barr virus infections (16) and sepsis (17). Extensive documentation of the orthomolecular approach to usage of Vitamin C and other vitamins is available at the orthomolecular medicine organization (20).

There are several different ways to consume vitamin C orally. It can be taken as either pure ascorbic acid (best in capsules or in liquid sipped through a straw as it can stress teeth enamel) or in a buffered form with ascorbate minerals. Studies have shown that adequate body levels of vitamin C, which among other functions helps restore another key cellular antioxidant called glutathione, can inhibit viral replication. From an orthomolecular health perspective, the daily dose can vary from 1000 to 4000mg (1 to 4 grams) per day. Too much taken at once can lead to gas or loose stools known as “bowel tolerance”. Because of biochemical individuality, the actual dose of vitamin C to reach bowel tolerance in humans can vary greatly depending on the health condition of each person. If there has been exposure to viruses, the bowel tolerance dose may go up substantially, so people should determine the best dose for themselves (11). In China, there are currently several human trials of intravenous vitamin C for Covid-19 directed by Dr. Richard Cheng who states: “The current sole focus on vaccine and specific antiviral drugs for epidemics is misplaced” (18, 19).

**Diet to Support Healthy Microbiome** is essential since more than half of the immune system is closely associated with flora of the gastrointestinal tract. Supportive probiotics can support the immune function and have been found in a Cochrane Collaboration review to reduce the incidence of Upper Respiratory Tract Infection (URTI) and significantly decrease the mean duration of symptoms (21). It is vital to avoid a fast food diet since its impact on our health is well documented. Details of the dietary impact of the fast food American diet and its effect on immunity was described by Myles in 2014 and be read online (22).

**Flavonoids** such as quercetin and rutin supplementation of 1000 mg daily has been shown by the respected Cochrane Collaboration on evidence-based medicine, to decrease URTI by 33% (95% Confidence interval from 31 – 36%) compared to control groups with no apparent side effects. The number of days being sick was also decreased by 40% (23). Specifics on how quercetin functions beneficially in influenza viral infections was published in 2017 (24).

**Glycyrrhizin from Licorice Root** was found in a 2003 study evaluating 5 botanical compounds to be the most active in inhibiting replication of the SARS-associated corona virus. With the new corona virus Covid-19 infection there have as yet not been any studies with this compound (25).

**Curcumins from turmeric** are valuable in reducing inflammation in influenza infections. In human cell studies and animal models, curcumin influences the inflammatory responses of immune cells, especially macrophages. In one such study, curcumin inhibited the NF-kB signaling pathway and downregulated the production of the cytokine. Over-activity and over-response of the immune system post-infection (called cytokine storm) can lead to complications and increased morbidity and mortality. Controlling excessive inflammatory response can be a valuable adjunct in viral infections (26).

**Key Mineral Selenium and Zinc** are important trace elements and a deficiency can adversely affect our health.  Selenium is an important mineral that has antioxidant and antiviral effects. A deficiency is associated with an increased risk of viral infection (27, 28). Zinc inhibits coronavirus activity and replication in vitro and it is important to maintain healthy zinc levels in your tissues (29).

**Value of Green Tea (EGCG)** has shown value in the prevention of viral illness. The green tea polyphenols, in particular epigallocatechin-3-gallate (EGCG) and its lipophilic derivatives, have been reviewed in many studies focusing on the antiviral activities that were described by Stephen Hsu in 2015 (30). The mechanism of antiviral action of the unique components of EGCG are described by Kaihatsu et al in 2018 (31).

**Reduce Exposure to EMFs** is recommended as electromagnetic fields (EMFs) cause oxidative stress and adversely influence the body’s energetic regulatory systems. The outdated exposure guidelines currently being used are only for short-term exposure of 30 minutes and consider only body heating from sources such as cell phones, cordless phones, WiFi, cell towers, smart meters. Current new installations of 4G antenna systems as well as the introduction of new 5G technology are being implemented, none of which have been tested for adverse health effects. Hard-wired computers (Ethernet connections) and limiting WiFi exposure of all sorts is recommended to allow your body to be less stressed which will support your health. Studies of the effects of EMFs on immune function are available (32, 33, 34). A video outlining the challenges of 5G wireless technologies is available on-line (35).

**Upcoming Review of this Topic**

In the coming weeks we hope you will join us for several virtual on-line meetings presented by Dr. Maret and others to hear a brief overview of this material and suggest other useful approaches, with Q&A opportunities. We will all be served by more of learning about and sharing many immune boosting practices and supportive supplements that can be helpful to strengthen your health – a strategy that serves us individually and societally. You will also learn about impact of electromagnetic fields on immune function and how to avoid unnecessary exposure. If you are interested in participating and have your questions answered, please contact us by email at maret@cruzio.com or call the Tree of Health at (831) 662-8421. It is anticipated that our office will stay open during these challenging times to support your health and wellness.

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