Total Body Immunity
ReMag, D3-K2 ReSet, Whole C ReSet, Flora ReVive, Pico Silver, Pico Zinc

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A Complementemt Formula Book
TOTAL BODY IMMUNITY
ReMag, D3-K2 ReSet, Whole C ReSet,
Flora ReVive, Pico Silver, Pico Zinc

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Learn How To Protect Your Health with the Completement Formulas by using our Total Body ReSet and Total Body Immunity protocols. (See Appendix A.)

INTRODUCTION

I set out to write an eBook about our latest dietary supplement, D3-K2 ReSet, one that we felt compelled to offer to our customers to help support the immune system. But I quickly realized it’s not a standalone product. First of all, it’s much more effective if you’re already saturated with ReMag and it goes along with Whole C ReSet, Flora ReVive, Pico Silver, D3-K2 ReSet, and Pico Zinc, which make up our Total Body Immunity Protocol.

I could write a full-length book about each of these nutrients and all their myriad activities, but I’ll try to focus on the ability of these nutrients to support the structure and function of the immune system – although they are also going to boost longevity, energy, and happiness too! Actually, I’ve already written books on ReMag, Flora ReVive, and Pico Silver and said words about zinc in my ReMyte book. So, this book, Total Body Immunity, will bring together the synergism of these supplements and their wonderful effects on the immune system.

NOTE: The dosages that I recommend for each of the immune-boosting nutrients can be found at the end of each chapter.

Sugar and The Immune System

At the beginning of Total Body Immunity, I want to drop sugar into your lap as the most dangerous “food” for the immune system. The words below are taken from a 2006 article by the late Dr. James Howenstine and represent the strongest inditement I’ve seen against sugar and its detrimental effect on the immune system.
"Ascorbic Acid Competes with Sugar in the Immune System"

Insulin moves both glucose and ascorbic acid into cells including phagocytic immune cells (white blood cells). The phagocytic cells like leukocytes attack and remove microbes, tumor cells and debris from the blood. The level of ascorbic acid in leukocytes may be 80 times greater than that found in plasma. Glucose and ascorbic acid are constantly competing for insulin transport so diets high in sugar and carbohydrates will decrease the amount of ascorbic acid that enters cells and thus create undesirable effects on the immune response.

Dr. Howenstine makes another comment about the ascorbic acid/glucose competition disrupting superoxide – a pathogen killer and inhibiting the ability of DNA and RNA to make new white blood cells. He says:

There is another form of competition between glucose and ascorbic acid. Ascorbic acid stimulates the hexose monophosphate (HMP) shunt and glucose inhibits it. The HMP is a series of chemical reactions that reduces niacin coenzyme NADP to NADPH. Phagocytes need NADPH to create superoxide and other reactive oxygen species that are used to destroy pathogens. In addition to creating NADPH ascorbic acid has the ability to deactivate excess quantities of NADPH and oxidative substances that could harm normal tissues.

The hexose monophosphate shunt also produces 5 carbon sugars (ribose and deoxyribose). These 5 carbon sugars are needed to make DNA and RNA. When the immune system faces microbial invasion it immediately signals for production of new immune cells that need these genetic materials DNA and RNA. If the body has too much glucose and too little ascorbic acid, there will be a lack of genetic material and inadequate DNA and RNA for creation of needed new leukocytes. Clearly high sugar intake
will reduce the potential health benefits of this pathway.

On my March 30, 2020 radio show, Dr. Levy reinforced Dr. Howenstine’s statement. Dr. Levy said:

Ascorbate is derived from glucose – it’s a very simple molecule. Ascorbate uses the insulin transporter of glucose to get into cells. It even crosses the blood brain barrier. There’s not a cell in your body that does not utilize vitamin C as the primary source of electrons, donating them to glutathione which is the most concentrated antioxidant inside your cells. But, in addition to that, vitamin C donates 2 electrons per molecule. Most other antioxidants donate only one. So, this gives ascorbate more power.

It’s obvious that this simple chemical competition results in vitamin C losing its position in the cells if there is too much circulating glucose and nullifying its important antioxidant mechanism.

**Natural COVID-19 Treatments**

A Health Freedom organization that I was associated with in 2004-2005, *The Alliance for Natural Health*, on May 14, 2020 wrote a very useful overview of “**Natural COVID Treatments**”. Unfortunately for billions of people, because these natural remedies are not patentable, they are not given credence by the medical establishment. In fact, social media organizations are running programs to remove sites that promote or sell these healthy alternatives.

The ANH says that “There are currently more than **one thousand clinical trials** listed on the government’s website looking at COVID-19; of those, there are only a small handful of trials assessing the efficacy of natural medicines for COVID-19.”

I’ll give an overview of several of the nutrients that ANH says are important to help the immune system protect against COVID-19. They talk about minerals
(potassium, silver, zinc, selenium), vitamins (vitamin D), probiotics, and herbs. For some unknown reason, they leave out magnesium and vitamin C.

Fortunately, our *Total Body Immunity* products cover all these nutrients. Let me outline the nutrients they talk about in this introduction to give you a snapshot of the rest of the book. Remember, we may be focused on COVID-19, but these nutrients will be beneficial against any assault on or in the body (viral, bacterial, fungal, or chemical). Here are excerpts from the ANH article (complete with links) along with my comments:

**Potassium** appears to be a key nutrient implicated in COVID-19 cases. Preliminary data show that COVID-19 patients exhibit hypokalemia (low potassium in the blood) and that potassium supplementation assisted recovery. Note that a National Survey of 16,444 Americans found that 100% were not getting the estimated average requirement (EAR) of potassium. This critical nutrient could be saving lives right now, but the government is focused on pharmaceutical interventions that will make drug companies rich.

**CD:** We recommend our *Pico Potassium* liquid for people with heart symptoms, on heart medications, or not eating enough potassium-rich foods.

**Zinc:** High concentrations of zinc inside cells inhibit the replication of RNA viruses such as COVID-19, but zinc does not have easy access to cells.

**CD:** As I detail below in Chapter Five, *Pico Zinc* is a picometer-sized, stabilized ion that can easily enter into cells to conduct its antiviral activity. It’s quite fascinating that the function of Hydroxychloroquine and the reason it may work is because it opens cell mineral ion channels and “incidentally” any available zinc in the blood stream can have access to the cells. I’ll speak more about that in Chapter Four.
Silver, particularly nebulized silver, also has potential as an antiviral or to prevent follow up bacterial infections. Crucial evidence shows that silver ions may be effective against certain strains of coronavirus like SARS. Silver also shows promise against other viruses like HIV and herpes. Meanwhile both the FDA and the FTC are refusing to allow any claims for silver at all.

**CD:** Besides being a stabilized ion of silver, our *Pico Silver* contains no additives or preservatives, so it is uniquely positioned to be used in a nebulizer or a neti pot as well as taken orally. I give details on exactly how to nebulize *Pico Silver, ReMag,* and 3% hydrogen peroxide under the heading *Immune System First Aid* in Chapter Eight.

**Vitamin D** It is a key immune system regulator. People with especially low D are more vulnerable to COVID-19. Research has also shown that low vitamin D is linked with worse COVID-19 outcomes.

**CD:** Vitamin D and vitamin K are the topics of Chapter Three. Our *D3-K2 ReSet* will supply the necessary vitamin D to create the appropriate blood levels of this vitamin to protect from various health conditions. The K2 component is very important to help direct the extra calcium that vitamin D will attract to the bones and teeth.

**Selenium:** Data show that dietary selenium is linked with COVID-19 outcomes: A study found that patients in areas with high levels of selenium were more likely to recover from the virus, while places with lower selenium intake had a death rate five times higher.

**CD:** Our *ReMyte,* multiple mineral contains stabilized ions of selenium that will support the immune system against infection.
Probiotics: Viruses cloak themselves from the immune system using a substance called nagalase. Some probiotic supplements can help control nagalase but are also unlikely to be tested for this use.

CD: Our *Flora ReVive* is a soil-based, antifungal probiotic that serves many functions. Since yeast overgrowth and the production of 178 different toxic waste products from yeast can overwhelm the immune system, controlling the amount of yeast in the body is extremely important. We have not tested it against nagalase.

Drugs that depress the immune system: Drugs like proton pump inhibitors can increase the likelihood of serious infection with COVID-19. Shouldn’t millions of users be told this information? We know that PPIs deplete the body of magnesium, so this may be a reason for patients on these drugs to have worse outcomes from COVID-19.

CD: I have consistently warned people that all drugs suppress the immune system and one reason is that they all deplete magnesium. The link above under proton pump inhibitors goes to an article called “Does Your Prescription Increase Your Risk of COVID-19?” Another ANH article called “Acid Blockers Make COVID-19 More Deadly” points to the know side effect of pneumonia with acid blockers (proton pump inhibitors) which are among the most widely prescribed drugs. Obviously, this means that a person on PPIs (Prilosec or Prevacid), who contracts COVID-19, already has possible lung damage and is much more vulnerable. Please read these two eye-opening articles; the second one even mentions that magnesium deficiency is induced by PPIs and these drugs receive a black box warning from the FDA.

The ANH article concludes with the statement that:

Our government now touts a drug, Remdesivir, as the new “standard of care,” the mortality rate of which is not statistically different from placebo.
Why? Because it is a new drug that can make a fortune for the pharmaceutical manufacturer? None of the natural treatments listed above can be easily patented, so no company can afford to pay for FDA approval. As the economy reels from the escalating costs of this pandemic, how can we continue to focus primarily on expensive drugs and ignore affordable micronutrients that show such promise?

The government may not promote the nutrients that the ANH and I are talking about, it may not allow social media sites to promote them, but they can’t prevent you from buying them or taking them. It’s your choice. And once you read the following information and understand what you can do to take care of your health, you won’t look back.

**The Causes of COVID-19 Deaths**

I want to address this question at the outset so we know why the nutrients I’m recommending can work to support the immune system. Intense study of COVID-19 victims tells us that the final cause of death is endothelial dysfunction and destruction.

The endothelium is a single layer of cells that line the interior surface of blood vessels, and also lymphatic vessels. These cells form an interface between circulating blood or lymph in the vessel and the vessel itself. Endothelial cells are the crucial barrier between the tube and the tissue and control the flow of fluid substances into and out of tissue cells.

Now, let’s find out who’s susceptible to COVID-19 and who dies from it. If 100 people are exposed to coronavirus, most will have no, mild, or moderate symptoms and they will recover. Fifteen to 20% of those who “catch” the virus will develop pneumonia and 4% will suffer severe lung disease, and 1% will die.

The current fatality rate is said to be 0.26%. However, the more antibody
testing that is done to determine the people who were infected and didn’t even know it, the rate will continue to drop. What scared the world was the original case fatality rate out of China of 4%. I’ll discuss this further below.

Those patients who develop pneumonia already have an extremely high degree of inflammation and are likely to have a high incidence of some of the inflammatory diseases like obesity, coronary heart disease, Type 2 diabetes, hypertension, peripheral artery disease, asthma, and COPD (chronic obstructive pulmonary disease).

What else is common in this population? Lots of drugs are prescribed for these “incurable” diseases. I’m all too familiar with these diseases – they are evidence of magnesium deficiency, and the drugs that are erroneously-prescribed cause more magnesium deficiency. So, bottom line, COVID-19 patients are magnesium-deficient as well as potassium-deficient as noted above. Often the two go hand-in-hand but unfortunately, magnesium is not even measured in a routine electrolyte testing panel.

Obesity is a challenge to our immunity because it is associated with a low-grade inflammation of white adipose tissue (WAT). This chronic activation of the innate immune system can subsequently lead to insulin resistance, impaired glucose tolerance and even diabetes. Here’s part of the abstract of a paper called “Adipose Tissue, Adipokines, and Inflammation.” It’s pretty dense, so feel free to just glance at it, but I think it gives proof of the damage caused by obesity that opens the door to metabolic syndrome and escalates magnesium deficiency.

WAT is no longer considered an inert tissue mainly devoted to energy storage but is emerging as an active participant in regulating physiologic and pathologic processes, including immunity and inflammation. Macrophages are components of adipose tissue and actively participate in its activities. Furthermore, cross-talk between lymphocytes and adipocytes can lead to immune regulation. Adipose tissue produces and releases a
wide variety of proinflammatory and anti-inflammatory factors. Proinflammatory molecules produced by adipose tissue have been implicated as active participants in the development of insulin resistance and the increased risk of cardiovascular disease associated with obesity.

Are COVID-19 patients tested or treated for magnesium deficiency? NO! This population is experiencing Total Body Meltdown and can’t fight off a virus. We should be treating this population with nutrients and building up the structure and function of the body and immune system so they have a fighting chance. You should also know that when people die of the “ordinary” influenza virus, it is usually due to pneumonia because the same negative factors of magnesium deficiency are at play.

Inflammation itself is another huge marker for susceptibility to COVID-19. The blood tests of COVID-19 patients show elevation of D-Dimer (a risk factor for blood clots), LDH (a marker for inflammation), and C-Reactive Protein (another marker for inflammation). Specifically, the virus binds to histamine-2 receptors in many tissues. Also, 100% of people who died had the virus cultured from their lungs. As billions of viruses go through their life cycle and die, their cells create foreign waste material that triggers what’s known as a cytokine storm as white blood cells rush into tissues to try and eliminate this debris. This whole process further increases inflammation. Most people die with severely damaged lungs, ARDS (acute respiratory disease) or blood clots.

**Asymptomatic Cases of COVID-19**

It took until the first week of June, when more antibody testing was being done, for us to see that “The Number of Asymptomatic Infections Dramatically Lowers the COVID-19 Case-fatality Rate.” On June 7, 2020, the *Orthomolecular Medical News Service* put out the following press release:
The public has been made aware of the number of COVID-19 deaths and reported cases that have occurred since the beginning of the current pandemic. However, the number of unreported cases has not been widely known or publicized. Recently the CDC estimated that more than one-third of SARS-CoV-2 (the coronavirus that can lead to COVID-19) infections are asymptomatic, meaning that initial estimations of its severity were grossly overestimated. Physicians for Informed Consent (PIC) has collated data from U.S. antibody studies and produced an educational document outlining how an accurate case-fatality rate (CFR) requires antibody studies in order to guide and measure medical care and public health policies.

Similar to CDC estimations, PIC’s analysis results in a COVID-19 CFR of 0.26%, which is comparable to the case fatality rates of previous seasonal and pandemic flu periods.

What I take from this information is that we should be studying the people that get the virus and either experience no symptoms or recover quickly. What is the lifestyle, diet, and supplement history of these “survivors” and what can we learn from them?
CHAPTER ONE: OUR INTRIGUING IMMUNE SYSTEM

On my March 30, 2020 radio show, Dr. Michael Gonzalez, a vitamin C expert said the following:

One of the most important things, in all types of diseases, is that you have enough nutrient co-factors. The immune system is very complex and requires a lot of metabolic phases. All these phases need specific enzymes and the enzymes require many co-factors. That’s why magnesium, vitamin C, vitamin B complex, and zinc all have a role. The better you are with these, the more you can modulate your immune system in order to respond to any attack.

Our immune system is the body’s natural Department of Defense, working around the clock to fight off germs and protect our health. The old Pacman video game is a great visualization of the immune system composed of various types of white blood cells that spring into action whenever germs and toxins threaten your health. I’ve done a lot of reading recently about the immune system and looked at several videos. I’ve taken words from the Introduction to the Immune System to give you a simplified overview.

Below is a brief summary of the immune system components and functions – obviously it’s a lot more complex. However, the bottom line remains – the immune system is made of cells and we have to keep making healthy cells using the right building blocks. These building blocks are available to you in our Completement Formulas.

THE LYMPHATIC SYSTEM

The lymphatic system oversees the whole immune system and is responsible for the development and circulation of immune cells that are produced in the bone marrow and reside in the spleen, thymus, and lymph nodes.
Immune System Function

There are lots of analogies about the immune system to try and make sense of its complexity. One is a sports analogy that we have to be on the defense to protect ourselves from foreign invaders. The defense is all lined up as invisible allies known as white blood cells that are born in the bone marrow and reside in lymph nodes, spleen, thymus, tonsils, and the intestines. When I was in medical school, we weren't even aware that 70% of immune function occurs in the intestines! Seventy Percent! So, added to the list of immune cells are the trillions of organisms that make up the intestinal Microbiome.

INNATE AND ADAPTIVE IMMUNE SYSTEMS

The innate immune system is like the padding and helmet of a player comprising skin, nose hairs, enzymes in saliva, perspiration, even tears, along with an inflammatory process that immune cells set off to deter germs. If the innate system is breeched, the adaptive immune system provides backup against pathogens in more specific ways.

White blood cells involved in the innate immune response include macrophages, dendritic cells, and granulocytes (neutrophils, eosinophils, and basophils). These cells respond immediately to threats and they also bridge the gap to activate the adaptive immune cells.

1. Humoral Immunity

This system enlists white blood cells called B cell lymphocytes that have the ability to recognize germs that don't belong in the body. They are made in the bone marrow but migrate to the spleen and lymph nodes to monitor and sift through the blood for germs. When they locate germs, they activate an intruder alert! Intruders
are called antigens (Ag) and the B cells produce antibodies (Ab) that recognize and bind to a specific antigen, which puts a big sign on the Ag/Ab compound that says, “Kill Me Now”.

2. **Cell Mediated Immunity (CMI)**

The cell mediated immune response protects against germs that have gotten past the innate system and have managed to infect body cells. CMI cells also sweep up newly formed cancer cells. The names of the white blood cells involved in CMI include macrophages, natural killer (NK) cells, and T Cell lymphocytes. The B cells mark the pathogen (with an antigen) for destruction and the T cells dispose of them. Special proteins on the T cells called T cell receptors are able to recognize a specific antigen.

**A Germ’s Fate**

I’ll skip descriptions of all the other white blood cells and walk you through the complete immune response when a pathogen enters the lungs.

**Innate Response**

1. Bacteria are breathed in and slip by your nose hairs, past the cilia in the airways, and penetrate past the epithelium layer of the bronchial tubes in the lungs.
2. In the lung tissue, bacteria will start to divide and might encounter a resident macrophage, which will ingest the bacteria and start releasing cytokines.
3. The purpose of the cytokines is to start the inflammatory process by making blood vessels leaky and attracting nearby eosinophils, basophils, and mast cells, which release their own cytokines and granules amplifying the inflammation while they are hunting down pathogens. Note, this is the cytokine storm that is responsible for people succumbing to COVID-19.
4. Neutrophils from the blood as well as fresh new ones from the bone marrow
dive into the tissue and join the battle.
5. If the pathogen is a virus, NK cells will join in to help destroy the infected cells.
6. Immature dendritic cells digest the pathogens and migrate from the lung tissue to nearby lymph nodes where they present the processed antigen on an MHC II protein to a new T Cell.

**Adaptive Immune Response**

1. The dendritic cells, which are part of the innate immune system, bridge the innate and adaptive immune responses when they present the antigens to the T Cell.
2. Bacteria might find their own way to a lymph node without the help of the dendritic cell where B cells can directly engulf the bacteria like a Pacman and present it to a T cell.
3. Either way, if the antigen is the right “fit” for the T Cell, it will begin to differentiate and undergo replication so it can kill similar antigens.
4. Differentiated T cells will release cytokines that will induce B Cells to differentiate into plasma cells which secrete antibodies that will go into the lymph and then the bloodstream. The antibodies will tag pathogens making it easier for phagocytes to eat them. If the pathogen is a virus, another type of T Cell will kill the virus replicating in a cell. Over time, as the invading pathogen dies off, most of the B and T cells die off because they are unused but a certain proportion turn into memory B cells and memory T Cells, which linger for years in case there are needed in the future.

**The Microbiome**

The following abstract excerpted from the journal, *Clinical and Experimental Immunology*, notes that 70% of the immune system is also found in the gut lining.
The gastrointestinal system plays a central role in immune system homeostasis. It is the main route of contact with the external environment and is overloaded every day with external stimuli, sometimes dangerous as pathogens (bacteria, protozoa, fungi, viruses) or toxic substances, in other cases very useful as food or commensal flora. The crucial position of the gastrointestinal system is testified by the huge number of immune cells that reside within it. Indeed, gut-associated lymphoid tissue (GALT) is the prominent part of mucosal-associated lymphoid tissue (MALT) and represents almost 70% of the entire immune system.

This revelation elevates the status of the GI tract and its trillions of microorganisms and it’s why Chapter 7 is all about the gut and the ability of our antifungal, probiotic *Flora ReVive* to bring it in to balance.

**Ten Immune Busters**

The following blog went to our customers to help people steer clear of commonly-encountered immune busters.

**1. Stress, anxiety, panic**

When we are stressed, our bodies tell our nervous systems and stress hormones that it is time to take action. Our hypothalamus, in the brain, tells the adrenal glands to produce more hormones, such as adrenaline and as well as cortisol, and release them into the bloodstream. Experiments where adrenaline is given intravenously shows it decreases magnesium as well as calcium, potassium, and sodium. This proves that when you are in a revved-up state and burning adrenaline, you are also burning off magnesium. And, because studies have found that magnesium has a strong relationship with the immune system, you’ll want to restore your body’s magnesium levels to keep the immune system working properly.
2. **Inadequate sleep**

According to the National Sleep Foundation, even though sleeping more isn’t likely to help you avoid getting sick, missing precious hours of sleep could weaken your immune system, leaving you more susceptible to infection.

3. **Yeast Overgrowth**

Yeast overgrowth is a major immune suppressant because yeast produces 178 different yeast toxins that, once released, have to be helped by the immune system to be eliminated from the body. All of the work the body undertakes to expel the toxins uses up nutrients and takes energy away from other body functions, especially the immune system.

Start by eliminating foods that feed yeast. For example, high-sugar fruits, added sugars, grains that contain gluten, caffeine, soda pop, and desserts. Read my book, *ReSet The Yeast Connection* and consider following my *Yeast Management Protocol* to balance yeast, which I talk about in Chapter Seven.

4. **Fast food and junk food**

According to research out of Germany, the immune system reacts similarly to a high fat and high caloric, fast-food diet as it does to a bacterial infection. And, this hyperreactivity can persist long after switching to a healthy diet. Therefore, the sooner these foods are eliminated, the better.

5. **GMO-based foods**

Genetically modified organisms place a burden on the immune system. Our immune system has developed and evolved over thousands of years. When we introduce a genetically modified food, the immune system doesn’t recognize the language of
“genetically modified” and, as a result, identifies it as foreign and executes an immune response.

The source of many vegetable oils – corn, soybean, cottonseed, palm, rapeseed, safflower, etc. – are genetically modified foods. These oils are in many processed foods, so watch out for them in the ingredient listing, or look for the “non-GMO” label.

6. Foods containing MSG

Research indicates that eating foods containing MSG can cause unwanted changes to your thymus and spleen, both of which are key players in your immune function. Both your thymus and your spleen create lymphocytes, which take out foreign invaders; your spleen also makes antibodies that help keep you well.

7. Sodas

The chemicals in soft drinks can wreak havoc on gut bacteria. This is problematic because there is a lot of interaction between the body’s immune system and bacteria in the gut.

A recent study done involving diet soda and gut bacteria found that consuming diet soda (containing aspartame) may cause harmful damage to your body’s Microbiome. The digestive and intestinal tracts are filled with good bacteria that keep the body healthy.

8. Overdoing caffeine

Too much caffeine can decrease the ability of our immune system to fight infections as well as remove damaged or abnormal cells. Studies also show women and men who drink large amounts of caffeine release higher levels of the stress hormone cortisol in response to physical and mental stress.
9. Smoking

Smoking suppresses immune cells. Cigarette smoke contains more than 4,000 toxins, most of which can irritate or kill cells in the body, according to the Centers for Disease Control. Smoking alters the number of various immune cells and impairs the functioning of others. As a result of these changes, smokers are more likely to succumb to several types of infectious diseases, including respiratory infections, flu, and even gum disease. When smokers quit, their immune activity begins to improve within 30 days.

10. Alcohol

There is significant evidence that alcohol disrupts immune system function. These disruptions can impair the body’s ability to defend against infection. Alcohol alters the numbers and relative abundance of microbes in the gut Microbiome, an extensive community of microorganisms in the intestine that aid in normal gut function. These organisms affect the maturation and function of the immune system. Alcohol disrupts communication between these organisms and the intestinal immune system.

The GABA and Cortisol Response to Stress

Stress lowers your defenses and can cause you to succumb to worrying thoughts. Here’s what’s happening biochemically: During stress there’s an increase in the neurotransmitter GABA, which helps slow down your thought processes, which allows you to get to sleep. Magnesium increases levels of GABA in the brain, but magnesium deficiency causes depletion of this important neurotransmitter. Magnesium counters stress by binding to and stimulating GABA receptors in the brain.

When GABA is low, your thought processes are out of control. Your brain gets
stuck in “indecision” and, what I call, gramophone thoughts, as you struggle to relax. So, people faced with low GABA often wake up with racing thoughts and can always find something new to worry about. Low GABA shows up in people with generalized anxiety disorder, irritable bowel syndrome, panic attacks, and involuntary movements such as seen in Parkinson's Disease.

When a person experiences stress, the body releases a cascade of stress hormones that lead to negative physical effects. Part of the reason is that stress events consume magnesium and create magnesium deficiency. The major hormone released during stress is cortisol. This hormone depletes melatonin, which interferes with sleep, causing insomnia, which weakens the immune system. Excess cortisol caused by stress has an immunosuppressive effect that directly affects the function of macrophages and natural killer cells and suppresses the maturation of T cells in the thymus.

Elevated cortisol also contributes to belly fat, depression, anxiety, mood swings, dementia, brain fog, insomnia, concentration problems, and mental disorders. How does magnesium help? It restricts the release of this stress hormone, providing a filter that prevents it from reaching the brain.
CHAPTER TWO: MAGNESIUM

Like everything else that I research, I want to know where magnesium fits into the big picture of immune function. As always, I start with the fact that magnesium is required for 80% of known metabolic functions in the body.

Serendipitously, I came across an article called "ATP as a Neuromediator at the Brain-Immune Interface" which pinpoints the importance of ATP (the energy molecule) in immune system function. You may know that I often talk about the mitochondrial Krebs Cycle that makes ATP and how it requires magnesium in 6 of its 8 steps. In fact, ATP is often called Mg-ATP. Here are a few words from the above article that put ATP and magnesium in the forefront of immune system activity:

It has now also become clear that ATP-mediated signaling is not restricted within the border of the nervous system. These ATP receptors are expressed in essentially all cells and tissues, including the cells of the immune system. Therefore, ATP is now regarded as a universal signaling substance, rather than a pure neurotransmitter or neuromodulator, playing a major role in the cross talk between different cell types, and at the interface between the nervous system and the immune system.

The following may be TMI (too much information) but I refer you to another article called "Regulation of T Helper Cell Function by Extracellular ATP." It highlights the importance of ATP in the function of the T cells and says that "Extracellular ATP can modulate the function of cells of the innate immune system as well as of T lymphocytes."

Feel free to just glance over these papers but realize that the real bit of gold they represent is that without magnesium there would be no ATP. Thus, the function of magnesium in the Krebs Cycle makes magnesium pivotal in the function of the immune system. Without ATP you wouldn’t have a mechanism for alerting
the T lymphocytes to do their job of killing foreign pathogens.

You can find a wonderful illustration of the Krebs Cycle in Appendix F.

Bottom line? Magnesium, and all the other cofactors in the Krebs cycle are required to make the energy to drive immune system functions. I went searching for the other cofactors in the Krebs cycle. There are B vitamins that you can obtain in our ReAline and manganese and copper that are in ReMyte.

When I read about copper, I realized I haven’t emphasized enough that copper is also found in our Whole C Reset. I mention on the Whole C ReSet label that tyrosinase is part of a food-based vitamin C complex and tyrosinase contains copper. For the people who say that copper deficiency is one of the causes of chronic illness, you’ll be glad to know you are covered with ReMyte and Whole C ReSet.

Never forget that magnesium is responsible for 80% of all the metabolic functions in the body, which translates into 1,000 enzyme systems many of which have wide-ranging effects on the immune system that go beyond the above ATP connection.

**Magnesium and Yeast Overgrowth**

A clinical finding that I’ve observed with our ReMag is that after taking it for a few months, some people who suffer from yeast overgrowth start having yeast die-off symptoms. They can have itchy rashes, a coated tongue, gas, diarrhea, and brain fog. Since the symptoms are obviously yeast die-off, we tell customers to meet it head on and go on a yeast detox.

When I began seeing this pattern with our customers, I realized that as they become saturated with magnesium their immune systems and detoxification systems were becoming activated enough to start killing yeast and disposing of its waste products through the skin and intestines. When I told this to my good friend,
Roby Mitchell MD, he confirmed that he has found scientific research that proves magnesium kills yeast.

**Histamine-2 Receptors**

In COVID-19 patients, the endothelial layer of blood cells is most affected. The virus attaches to histamine-2 receptors of the endothelial cells. We know that magnesium activates 1,000 enzymes. One of the 1,000 enzyme systems that is activated by magnesium is the histamine degrading enzyme, diamine oxidase (DAO).

An animal study published in the journal, *Drug-Nutrient Reactions*, found that dietary restriction of magnesium caused histamine levels to rise considerably after just four days of restriction, with histamine levels reaching a peak after eight days. But levels then quickly dropped after just two days of adding magnesium back in the diet.

Another study in the *Journal of Nutritional Science and Vitaminology* tells us that magnesium deficiency is linked to increased mast cells migration to the small intestine, kidney, bone marrow, and liver. Mast cells contain histamine and release it when fighting microorganisms.

These studies point to the possibility that people with histamine sensitivity are magnesium-deficient. I also know that our customers with histamine sensitivity, who saturate with *ReMag* say their histamine sensitivity subsides.

**MAGNESIUM AND THE IMMUNE SYSTEM**

The following reports were written in the early 1900s, but timing doesn’t make them any less valid. Here is what I wrote about a magnesium researcher, Dr. Pierre Delbet, in *The Magnesium Miracle*.
After judging magnesium chloride to be a very effective antiseptic solution, Dr. Delbet began testing oral forms of it on dogs and then on his patients, finding it to be a powerful immune system booster. In a paper presented to the French Academy of Medicine in September 1915, Delbet describes the effect on white blood cells of a solution of magnesium chloride injected into the veins of dogs. White blood cells from blood samples taken before and after the injection were tested for their microbe-killing ability.

Delbet continues:

...five hundred white cells in the first sample destroyed 245 microbes. Five hundred white cells from the second destroyed 681 microbes. This increase in microbe-killing under the influence of magnesium chloride was 180 percent greater than the other solutions. More experiments were performed; in one there was an increase of 129 percent, in another, 333 percent.

**Magnesium and Polio**

Polio is a viral illness, which can lead to paralysis in 0.5% of cases. It’s a terrible disease and spread fear throughout the world when it cycled through communities back in the 1950s. I quote from *The Magnesium Miracle*:

Fortunately, polio is not the scourge it once was. However, back in the 1920’s it was a terrible disease. A follower of Dr. Delbet, Dr. Neveu, published a booklet titled *Therapeutic Treatment of Infectious Diseases by Magnesium Chloride: Poliomyelitis*. The book described fifteen cases of polio effectively treated with magnesium chloride. Neveu was so convinced of the effectiveness of magnesium chloride that he insisted that every home should have a solution of magnesium chloride on hand to treat the first signs of sore throat, especially when stiffness of the neck was involved.
His formula was 20 grams of magnesium chloride powder to 1 liter of water.

Dr. Neveu’s work was also reported in *Magnesium, The Nutrient That Could Change Your Life*, a Rodale Press book. Here is a quote that explains the use of Dr. Neveu’s magnesium chloride formula for polio:

Dr. Neveu’s idea is that every household should have on hand a mixture of a certain amount of magnesium chloride in water . . . the mixture being 20 grams of desiccated magnesium chloride to one liter (about a quart) of water, and at the first appearance of a sore throat and a stiff feeling in the back of the neck, or even as late as the first appearance of paralysis, the taking of the magnesium mixture will put the patient out of danger within two days, with an eventual total cure, he claims.

Dr. Neveu says that all sore throats do not predict polio, but when a sore throat is accompanied by a stiffness of the vertebral column, then treatment should begin as soon as possible, under the care of a qualified physician.

Dr. Neveu says that the virus of Poliomyelitis destroys the nerve substance of the anterior horns of the marrow, and that this destruction leaves in its wake sclerotic scars that escape all medical or surgical intervention. The destruction of the nervous substance occurs in a period of time more or less long, and the magnesium arrests the process.

**Epstein-Barr Virus and Magnesium**

Allow me to bring this conversation about magnesium and viruses up to the present. When Ginney Sanders and I attended *The Magnesium in Health and Disease Conference* at the NIH, March 2019, one presentation really caught our attention. It was by Dr. Mike Lenardo, who is Chief of Molecular Development of the Immune
System Section and Co-Director of the NIAID (National Institute of Allergy and Infectious Disease) Clinical Genomics Program. Dr. Lenardo is a medical doctor, a molecular immunologist, and geneticist recognized for his work on fundamental immunological mechanisms.

The paper Dr. Lenardo presented is called “XMEN disease: A New Primary Immunodeficiency Affecting Mg2+ Regulation of Immunity against Epstein-Barr Virus.” Here are some notes I took during Lenardo’s presentation:

1. A kinase enzyme that works with T Cells requires two magnesium ions. We used to think it was just one magnesium, but it is two making magnesium activity twice as important.
2. The T Cell kinase enzymes act as a magnesium sensors for T cell activation.
3. If you deprive mice of magnesium for 7 days, T cells dramatically lower and EBV is activated in this magnesium-depleted environment.

The abstract for Lenardo’s paper said that the study: “…revealed an unexpected quantitative role for intracellular free magnesium in immune functions and has led to novel diagnostic and therapeutic strategies.”

People who suffer Chronic Fatigue Syndrome are said to be infected with EBV, which clinically seems to be the case. But I also add yeast overgrowth that I think completes the picture and I call the condition Total Body Meltdown.

**MAGNESIUM AND VITAMIN D**

Magnesium regulates vitamin D, copper, zinc, and potassium levels in the body. All of these nutrients are involved with supporting the immune system but let’s take a closer look at vitamin D.

GrassrootsHealth (primarily a vitamin D research organization) analyzed their dietary supplement intake data and asked the question “Are Both
Supplemental Magnesium and Vitamin K2 Combined Important for Vitamin D Levels?” Here are their findings:

On average, those taking both supplemental magnesium and vitamin K2 have a higher vitamin D level for any given vitamin D intake amount than those taking either supplemental magnesium or vitamin K2 or neither. Specifically, 244% more supplemental vitamin D was needed for 50% of the population to achieve 40 ng/mL (100 nmol/L) for those not taking supplemental magnesium or vitamin K2 compared to those who usually took both supplemental magnesium and vitamin K2.

In another paper that echoes the first, GrassrootsHealth asks “Is Supplemental Magnesium Important For Vitamin D Levels?” Here’s their argument:

Using the data provided for the GrassrootsHealth study from over 3,000 participants with supplemental magnesium information, we plotted every participant’s supplemental vitamin D intake (dose) and blood level (response) and determined the average trends for participants who reported taking no supplemental magnesium, those who reported taking 1 to 399 mg/day, and those who reported taking 400 mg/day or more.

The dose-response chart shows that on average, those taking more supplemental magnesium have a higher vitamin D level for any given vitamin D intake amount than those taking less supplemental magnesium. Specifically, 146% more supplemental vitamin D was needed for 50% of the population to achieve 40 ng/mL (100 nmol/L) for those not taking supplemental magnesium as compared to those who took 400 mg/day or more.

A study ”Magnesium Status and Supplementation Influence Vitamin D Status and Metabolism” in The American Journal of Clinical Nutrition, concludes that optimal levels of magnesium may play an important role in
the vitamin D status of an individual.\textsuperscript{6}

In over 12,000 individuals taking part in the \textit{National Health and Nutrition Examination Survey (NHANES) 2001–2006}, the research team found that individuals with high levels of magnesium intake, whether from dietary sources or supplements had higher levels of vitamin D. They found that magnesium is a cofactor in the synthesis of vitamin D from both exposure to sunlight and dietary sources. They also saw that magnesium deficiency shuts down the vitamin D synthesis and metabolism pathway.

**MAGNESIUM VERSUS VITAMIN C**

On my March 30, 2020 radio show I asked vitamin C and magnesium expert, Dr. Thomas Levy which vitamin he thought was more important, magnesium or vitamin C. Here’s what Dr. Levy said:

> It’s a good question. I would say that they are equally important insofar as achieving a normal level of oxidative stress inside your cell, which is what you need in order to have a healthy cell. Your primary constituents inside the cell with regard to redox balance are calcium, magnesium, vitamin C, and glutathione.

> When you have high calcium, you have low magnesium and low vitamin C and lots of oxidative stress. When you can push both magnesium and vitamin C inside the cell, the calcium leaves the cell and you have the potential not only to bring that intracellular oxidative stress into a normal range. But when you do that, you actually have restored the cell to a normal state, no matter what disease process it might have been involved with earlier.

> Actually, I have to be honest and say the magnesium is more
important than vitamin C. Why would I say that? With vitamin C, there are many other antioxidants that can partially compensate for lack of vitamin C. So, in the face of a vitamin C deficiency, you can still get some antioxidant effect with other antioxidants. But when you are deficient in magnesium, nothing can deal with that deficiency other than magnesium. So, in that regard, I would say magnesium is a more important supplement because nothing else can take its place.

**REMAG DOSAGE**

The RDA of magnesium is only 350-400mg, but I say we probably require 600mg per day. And if you are taking medications or under stress or have had surgery or infections and a myriad of other stressors, then you will require more. I needed to take 1,200mg of ReMag, equal to 4 teaspoons for a year and a half before I was saturated with enough magnesium. You can read more about that in my *Magnesium Miracle* book or my online book *ReMag – Invisible Minerals Part I*.

The amount of ReMag for protecting the immune system can range from 1 tsp to 4 tsp a day. I would gauge that amount by doing the GrassrootsHealth Home Blood Test and finding out your whole blood RBC levels. You want to be at the top of the range which is 28-46 mg/L.
CHAPTER THREE: D3-K2

I think it’s fairly safe to say that I’ve had a love-hate relationship with vitamin D for many years. Or is it a hate-love relationship? Because I used to “hate” this hormone disguised as a vitamin, but now it’s my new best friend because it’s also the best friend of magnesium!

I have a huge file on high-dose vitamin D that I started in 2010 when it became the latest supplement on the block. It seems that as soon as calcium fell out of favor, because it was causing body-wide calcification, vitamin D took its place. But ironically, high-dose vitamin D can also cause calcification if you are not saturated with magnesium!

Sure enough, several years ago, I began hearing from clients, who, when they took high-dose vitamin D, on the recommendation of their practitioner, began re-experiencing their magnesium deficiency symptoms. At first, I chalked it up to the buildup of calcium, since a major role of vitamin D is to absorb calcium from the intestines. However, with a little digging I found that magnesium is required in 8 steps that transform vitamin D from the inactive state to the active state. Please click to Appendix F where you will find an illustration of the complex pathways that create vitamin D3 and you can count for yourself the 8 Mg circles that show where it is required as a cofactor. These 8 steps can be come to a shuddering halt when you take high-dose vitamin D without having enough magnesium on board.

That’s when I started railing against vitamin D and telling people to stay within a 1,000-2,000iu range, and to be sure and maintain magnesium saturation with ReMag.

However, the opposite story is being told by promotors of high-dose vitamin D. They say that SEVERAL HUNDRED THOUSAND international units of vitamin D are a miracle cure and they display testimonials confirming the “cures.” Of course, I wondered how long the “cure” lasts and if the many magnesium
deficiency symptoms that can occur are even recorded.

When I was doing research for The Magnesium Miracle, Dr. Mildred Seelig, a magnesium expert, told me that when people take medications, drug toxicity forces magnesium to come out of storage to detoxify the drugs and in that transitory period a person can feel better because there is more magnesium circulating in the blood and cells!

Could this be happening with high dose vitamin D? As I mentioned above, magnesium is necessary for most of the steps that activate vitamin D, thus magnesium is similarly pulled out of storage. As it’s being shunted to tissues to help vitamin D metabolism, is it participating in other metabolic functions. Could magnesium account for the “miraculous cures” purportedly caused by vitamin D or at the very least be part of the cure? It is possible, but nobody was doing the necessary research to investigate the relationship between magnesium and vitamin D until GrassrootsHealth came along!

**GrassrootsHealth (GRH), Vitamin D, and Magnesium**

GrassrootsHealth was founded by Carole Baggerly in 2007 to research how much vitamin D was required to achieve clinical results and match those results to certain blood levels of vitamin D. The GRH motto is *Moving Research Into Practice.*

Carole told me that Dr. Mercola suggested she get in touch with me about my work with magnesium and bring magnesium into her research. The results of the first vitamin D blood tests that I and many of our customers submitted showed very low levels. Most of us are taking *Blue Ice Royal,* the food-based A, D, K supplement and it’s not giving us enough to put us in the clinically effective range for vitamin D.

Once the comparisons began between vitamin D and magnesium, it didn’t take long for Carole to realize that magnesium is essential for vitamin D metabolism and that optimal dosing of both nutrients is crucial for good health. In our research
project we added magnesium and TSH to the tests they were already running, which are vitamin D and omega-3 fatty acids.

The History of GrassrootsHealth

Here’s the skinny on GrassrootsHealth. It’s an online nutrient research portal for the lay public. It has a panel of 48 senior vitamin D researchers from around the world contributing to its operations as well as many new researchers lending their support with the expanded focus on other nutrients like magnesium and assessing TSH for thyroid function.

GRH analyzes supplement intake, monthly health improvements, and validates them with blood tests. The method of blood collection that GRH makes available are In-Home, Finger-Stick, blood smears on specially treated cardboard strips.

When I blogged about GRH initially I said that this project is earth-shattering for me because I’m reversing my stand against blood testing. That’s because with GRH I have found a way to work closely with one blood testing lab using standardized methods. We correlate these blood tests with uniquely designed questionnaires that document supplements and symptoms, and the progress that people are achieving on our protocols.

It’s the type of nutrient research that I’ve always wanted to do and that has never been done before. Note what I just said. This type of research has never been done before!

Having one lab do all the testing removes the inconsistency of having thousands of customers using the 5,000 different labs in the U.S. and being subject to the variability of their test procedures. We use questionnaires that we design to cover the symptoms, conditions, and reactions that we most often see, making them specific to our customer base. Doing monthly tracking gives us data on what’s
working and how we can improve our customers’ outcomes even more! We can also offer the test to regions and countries that don’t have certain types of lab testing. For example, I can’t get a Whole Blood Magnesium test in Maui and neither can most of Canada! But I can poke my finger in the comfort of my own home and drop my blood on a piece of cardboard and mail it off the same day.

The big problem with medical research is that it obsessively tests only one-thing-at-a-time, completely ignoring the commonsense fact that the body doesn’t work like that. Every biochemical reaction in the body draws upon many different nutrient factors to achieve health. Isolating one nutrient just doesn’t make sense.

GRH recommends following your serum 25(OH)D levels to determine your individual vitamin D adequacy, not just giving a blanket dosage of vitamin D to a person according to their age. They have found that the amount of vitamin D needed varies considerably from person-to-person. Again, this may be related to the amount of magnesium a person has in storage and that is available for vitamin D metabolism.

The GRH Scientific Panel has made great strides over the past 12 years and has concluded that a level of 40-60 ng/mL (100-150 nmol/L) is optimal. They have also found some compelling evidence that women with a vitamin D level of 60ng/mL have a much lower risk of breast cancer or breast cancer recurrence. Since I’ve only been recommending levels of 30-40ng/mL, I wanted to learn what amount of vitamin D our customers require to reach optimum blood levels. With the testing we will also find out if the vitamin D levels in the blood will be affected when a person has sufficient magnesium.

**My Personal Vitamin D Experiment**

My own vitamin D was an abysmally low 19 ng/mL, yet I feel terrific. My *Whole Blood Magnesium* was a whopping 60, well over the range of 28-46 mg/L. Could the magnesium saturation I’ve achieved with *ReMag* make my vitamin D work more
effectively? I don’t know the answer but it’s one of the many questions GrassrootsHealth will try to solve by analyzing their data.

Since I’m engaged with GrassrootsHealth in a research experiment and I love experimenting on myself, I decided to add 5,000 IU of vitamin D to my supplements and continue with 1-2 Blue Ice Royal capsules per day. After reading more about the benefits of vitamin D and having Carole Baggerly of GRH on my radio show, I increased to 10,000 IU. At no time did I suffer an increase in magnesium deficiency symptoms or require more than 300mg (1 tsp) of ReMag a day. I believe that attests to my degree of magnesium saturation.

I redid my GrassrootsHealth test on May 18, 2020 and my vitamin D, which was 19 ng/mL is a robust 53 ng/mL, so I will continue taking 10,000 IU of vitamin D and check the levels again in 6 months. Interestingly enough, my magnesium level dropped to 48 mg/L from 60mg/L. However, you will note that the magnesium range is 28-46mg/L, so I’m at the high normal level that I recommend. With no other changes in my supplement intake, I presume the loss is due to magnesium taken from storage to metabolize the extra vitamin D I’m taking. I will experiment by taking 1.5 tsp of ReMag every other day to see if I can raise my magnesium levels on my next test.

It’s also interesting that I feel no different taking 10,000 IU of vitamin D, and neither have experienced any magnesium deficiency symptoms or have I needed to take more ReMag. However, now I know that my magnesium levels are lower, which may be due to the extra drain on magnesium caused by my increased intake of vitamin D. I find it all very fascinating and will continue to experiment.

**Dosing Vitamin D Through the Ages**

Part of the issue with vitamin D is defining "normal" dosage. Sixty years ago the recommended dosages of vitamin D were much higher.
Total Body Immunity

- Before 1964 – 4,000-5,000
- 1964 – lowered to 2,000
- 1975 – lowered to 1,000
- 1992 – lowered to 400

The 1992 recommendation was introduced because 1 tsp of cod liver oil, containing only 400 IU of vitamin D, was known to prevent rickets. This dosage aligns with the draconian policy of the NIH that the RDA for nutrients should merely prevent nutrient-deficiency diseases, such as scurvy (vitamin C deficiency) and pellagra (niacin deficiency). Furthermore, the NIH and FDA say that allopathic medicine is in charge of preventing and treating disease with drugs and surgery.

The FDA recommendations for nutrients to only prevent nutrient deficiency are enforceable. For example, I have been told directly by the FDA that if I say or even imply, or have testimonials on my websites saying that magnesium treats a disease, then I am declaring that magnesium is a drug and I have to do a billion dollar study to prove that magnesium treats that a particular disease. Does anyone have a spare 65 billion dollars stashed away so I can research the 65 disease conditions that may be caused by magnesium deficiency?

Active Vitamin D vs Storage Vitamin D

The standard vitamin D blood test measures total 25-hydroxy vitamin D (vitamin D2 plus vitamin D3) in the blood. This is called the storage form of vitamin D, which is then converted by the kidneys to the biologically active form, 1,25-dihydroxycholecalciferol.

Researchers say that there is generally no need to calculate the level of active vitamin D. They say the critical factor is how well stocked the vitamin D stores are. But I say the true critical factor is probably the amount of magnesium available that will move the inactive vitamin D into the active position.
It’s at the kidney level that magnesium comes into play. When vitamin D deficiency symptoms don’t improve, or vitamin D blood levels don’t improve doctors may give higher and higher doses of vitamin D to try and force conversion without realizing that magnesium is probably the deciding factor. If you don’t have enough magnesium you can’t convert vitamin D, and if you take too much vitamin D, it can use up your magnesium stores and give you magnesium deficiency symptoms and make you even less likely to convert vitamin D.

Another concern that made me question high-dose vitamin D is the fact that the active form, 1,25 (OH)D is a hormone, not a vitamin. Hormone levels are regulated through a biochemical feedback system. For example, one of the main jobs of vitamin D is to grab calcium from the diet and put it in the bloodstream and then into the bones and teeth. When you have enough calcium, then “hormone” D levels should go down because no more calcium is required (at that time).

But if you regard vitamin D as a vitamin, you might think it’s not good for a vitamin to be low and you should take more of it. In our current state of too much calcium and not enough magnesium in our diet and supplements, perhaps we are finding low vitamin D, whereas if our calcium was lower and our magnesium higher, our vitamin D would be higher as well.

Again, this is where GRH research is crucial because they are correlating vitamin D blood levels with clinical outcomes not just speculating about dosage.

**Vitamin D, Vitamin C, and Magnesium**

Carole Baggerly said on my April 6, 2020 radio show that “We already see scientifically that people who are taking up to about 1,000mg of vitamin C per day can take considerably less vitamin D to achieve a given serum level of vitamin D. The same seems to be true with magnesium but GRH is amassing more data to draw conclusions and give us the amount of magnesium that makes a difference.

This is exactly the kind of information we need in order to fine tune our
supplement intake. Please join in this testing. The *GrassrootsHealth Test Kit* can be accessed by our customers all over the world! Just go to the *RnA ReSet* website and click on Research Project on the home page. Even better news is that we will give you coupons for our products that equal the cost of the test.

**More Than A Calcium Grab**

As I mentioned above, I used to think that vitamin D’s only task was to grab calcium from the diet to help build our bones and teeth. Even then, it requires vitamin K2 to complete that transaction.

There are thousands of studies that give a much broader picture of the importance of vitamin D. However, not enough of them talk about the importance of magnesium as the driver of vitamin D activity. I think that’s what makes many vitamin D studies ambiguous. As I’ve said, I want to focus on the immune building aspects of vitamin D.

What follows is a list of scientific studies that focus on vitamin D as far more than a calcium sponge but as an important factor in many conditions, and especially COVID-19, inflammation, lung disease, and cancer. I was going to put them in the Appendix but I want them front and center to show you the importance of vitamin D in supporting your immune system.

**The Science Behind Vitamin D**

1. Low Population Mortality from COVID-19 in Countries South of Latitude 35 Degrees North Supports Vitamin D as a Factor Determining Severity.\(^7\)
2. The Possible Role of Vitamin D in Suppressing Cytokine Storm and Associated Mortality in COVID-19 Patients.\(^8\)
3. Vitamin D levels appear to play role in COVID-19 mortality rates. Patients with severe deficiency are twice as likely to experience major complications.\(^9\)
4. Associations of C-reactive Protein with 25-hydroxyvitamin D in 24 Specific
Diseases: A Cross-sectional Study from NHANES.  

5. Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths.  

6. Former CDC Chief Dr. Tom Frieden: Coronavirus infection risk may be reduced by Vitamin D.  

7. Patterns of COVID-19 Mortality and Vitamin D: An Indonesian Study. Vitamin D status is strongly associated with COVID-19 mortality outcome of cases.  

8. Why are African Americans so much more deficient in vitamin D?  


10. Vitamin D deficiency contributes directly to the acute respiratory distress syndrome (ARDS).  

11. Associations of C-Reactive Protein (a measurement of inflammation) with 25-Hydroxyvitamin D in 24 Specific Diseases.  

12. Association of C-reactive protein and vitamin D deficiency with cardiovascular disease.  

13. Vitamin D deficiency - a potential risk factor for sepsis development, correlation with inflammatory markers, SOFA score and higher early mortality risk in sepsis.  


15. Breast Cancer Risk Markedly Lower with Serum 25-Hydroxyvitamin D Concentrations ≥60 vs <20 ng/mL.  

16. Reduce the Risk of Breast Cancer by 80%.  

*Science Daily*, an online research news publication, stated that “Vitamin D Levels Appear to Play Role in Covid-19 Mortality Rates.” This study found that patients with severe vitamin D deficiency are twice as likely to experience major complications. Here is their executive summary:
Researchers analyzed patient data from 10 countries. The team found a correlation between low vitamin D levels and hyperactive immune systems. Vitamin D strengthens innate immunity and prevents overactive immune responses.

The research team conducted a statistical analysis of data from hospitals and clinics across China, France, Germany, Italy, Iran, South Korea, Spain, Switzerland, the United Kingdom (UK) and the United States. They found that patients from countries with high COVID-19 mortality rates, such as Italy, Spain, and the UK had lower levels of vitamin D compared to patients in countries that were not as severely affected.

The team discovered a strong correlation between vitamin D levels and the cytokine storm – a hyper-inflammatory condition caused by an overactive immune system – as well as a correlation between vitamin D deficiency and mortality. They concluded that, "Cytokine storm can severely damage lungs and lead to acute respiratory distress syndrome and death in patients. This is what seems to kill a majority of COVID-19 patients, not the destruction of the lungs by the virus itself. It is the complications from the misdirected fire from the immune system."

This is exactly where vitamin D plays a major role. Not only does vitamin D enhance our innate immune system, it also prevents our immune system from becoming dangerously overactive. This means that having healthy levels of vitamin D could protect COVID-19 patients against severe complications, including death. The researchers continued, "Our analysis shows that it might be as high as cutting the mortality rate in half. It will not prevent a patient from contracting the virus, but it may reduce complications and prevent death in those who are infected."

I’ve already mentioned above that people who are susceptible to COVID-19 often suffer from metabolic syndrome and inflammatory conditions like obesity, heart disease, high cholesterol, high blood pressure, which cause endothelial inflammation and dysfunction. Fortunately, vitamin D helps regulate inflammation.
Of course, the article ended by saying that more research is needed to determine whether the public should take vitamin D and how much. As Carole Baggerly famously said at an NIH conference on vitamin D, “Where is our sense of urgency?” It’s with a sense of urgency that we’re doing the research with GrassrootsHealth and that’s why I’m writing this book.

**The Best Vitamin D Information Sources**

I endorse the following websites because they are up to date and they totally embrace the Magnesium-Vitamin D connection and understand how crucial it is for a person to have enough magnesium to help metabolize their vitamin D. How much vitamin D? I’ll talk about that in Chapter Two.

https://www.grassrootshealth.net/ run by Carole Baggerly  
https://vitamindwiki.com/ run by Henry Lahore

**COVID-19 AND BEYOND**

The founder of GrassrootsHealth, Carole Baggerly wrote in a recent press release that:

There are two main reasons why respiratory tract infections such as influenza and COVID-19 occur in winter: winter sun and weather and low vitamin D status.

Many viruses live longer outside the body when sunlight, temperature, and humidity levels are low as in winter. Vitamin D is an important component of the body’s immune system, and it is low in winter due to low solar ultraviolet-B (UVB) doses from exposure and the low supplement intakes of most. While nothing can be done about winter sun and weather, vitamin D status can be raised through vitamin D supplements.
Vitamin D has several mechanisms that can reduce risk of infections (Grant et al., 2020). Important mechanisms regarding respiratory tract infections include:

- Inducing production of cathelicidins and defensins that can lower viral survival and replication rates as well as reduce risk of bacterial infection
- Reducing the cytokine storm that causes inflammation and damage to the lining of the lungs that can lead to pneumonia

In addition, vitamin D deficiency has been found to contribute to acute respiratory distress syndrome, a major cause of death associated with COVID-19.

To reduce risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/day (250 micrograms/day) of vitamin D for a few weeks to rapidly raise 25-hydroxyvitamin D [25(OH)D] concentrations, followed by 5,000 IU/day. The goal should be to raise 25(OH)D concentrations above 40–60 ng/mL (100–150 nmol/l), taking whatever is necessary for that individual to achieve that level. For treatment of people who become infected with COVID-19, higher vitamin D doses would be required to rapidly increase 25(OH)D concentrations.

Carole also says the following about the association of vitamin D and magnesium:

Magnesium supplementation is recommended when taking vitamin D supplements. Magnesium helps activate vitamin D, which in turn helps regulate calcium and phosphate homeostasis to influence growth and maintenance of bones. All the enzymes that metabolize vitamin D seem to require magnesium, which acts as a cofactor in the enzymatic reactions in the liver and kidneys. The dose of magnesium should be in the range of 250–
500 mg/day. Other cofactors include vitamin C and omega-3 fatty acids.

Carole again emphasizes the importance of sunshine in her blog:

Evidence supporting the role of vitamin D in reducing risk of COVID-19 includes that the outbreak occurred in winter, a time when 25-hydroxyvitamin D \([25(OH)D]\) concentrations are lowest; that the number of cases in the Southern Hemisphere near the end of summer are low; that vitamin D deficiency has been found to contribute to acute respiratory distress syndrome, and that case-fatality rates increase with age and with chronic disease comorbidity, both of which are associated with lower \(25(OH)D\) concentration.

**BENEFITS OF VITAMIN D**

I’ve listed the scientific studies associated with the antiviral properties of vitamin D, above in “The Science Behind Vitamin D.” With the following list, I’m going beyond the immune system topic of this book, but I can’t help but share the benefits of vitamin D and noting that they often depend on concurrent use of magnesium.

**1. Building Bones**

Vitamin D assists the efficient uptake of calcium that becomes part of our bone matrix. It is well known that people who don’t get enough exposure to sunlight are prone to brittle bones. Also, consuming vitamin D lowers the incidence of osteoarthritis. Hand-in-hand in this endeavor is magnesium; without it, bones are brittle and shatter more easily. Even more specifically, magnesium stimulates a particular hormone, calcitonin, that helps to preserve bone structure and draw calcium out of the blood and soft tissues back into the bones, preventing some forms of arthritis and kidney stones.
2. Increased Testosterone

As a prohormone, vitamin D helps the body produce and regulate several hormones, including testosterone, which will increase muscle mass, virility, strength, and energy levels. Also, many studies have found that the higher the magnesium levels, the higher the testosterone.

3. Managing Diabetes

The beneficial effect of vitamin D on managing diabetes is likely due to its prohormone effects, which help regulate insulin. Magnesium is also an important nutrient in the management of diabetes. In fact, magnesium deficiency is an independent predictor of diabetes. Diabetics both need more magnesium and lose more magnesium than non-diabetics. Magnesium is necessary for the production, function, and transport of insulin. Much more can be said about diabetes and magnesium; the following list of common complications of diabetes that relate to magnesium deficiency is taken from The Magnesium Miracle:

- Nerve damage, called diabetic neuropathy, which mostly affects the feet, with symptoms of numbness, tingling, burning, and pain
- Atherosclerosis and heart attacks
- Damage to small blood vessels in the eyes and kidneys, causing:
  - Vision loss (diabetes is the leading cause of blindness in the United States)
  - Kidney disease (often related to renal artery calcification)
- Diabetic foot ulcers, with increased susceptibility to infection, gangrene, and amputation
- Impotence in men

All these complications relate to magnesium deficiency and demonstrate the need
for more sensitive magnesium testing and magnesium supplementation for all diabetics.

4. Lung Function

Vitamin D supports lung function by increasing oxygenation in the lungs for people suffering with lung disease and it also helps to improve athletic performance. The exact mechanism is not clear but it’s likely through vitamin D’s action in regulating inflammation and its action on muscles.

5. Strength

The hormonal action of vitamin D helps to boost testosterone levels. This alone can be enough to increase strength both in the long term and in the short term. At the same time, it can increase strength by increasing the absorption of calcium and magnesium. These minerals aren’t only engaged in producing bone, they also strengthen connective tissue, which has been shown in studies to actually increase contractile strength and thereby help athletes to lift and push greater weights.

6. Teeth

Better absorption of calcium and magnesium through the activity of vitamin D helps to strengthen teeth and make them appear whiter.

7. Energy Levels

Vitamin D helps increase your energy levels. You have direct experience of that when you play outside and pull in vitamin D from the sun and you feel your energy soar. We also know that magnesium is even more important in the production of energy since it is required for 6 of the 8 steps in the Krebs energy cycle that makes ATP.
8. Sleep

Vitamin D boosts sleep and helps regulate your biological clock. Magnesium is also important for sleep and the mechanisms are more well defined. It relaxes muscles, calms the nerves, and increases calming and sleep-inducing neurotransmitters including melatonin.

9. Insulin Regulation

Research has repeatedly found a clear association between low vitamin D levels in patients with insulin resistance and a high risk of developing type 2 diabetes. Vitamin D increases insulin sensitivity and helps balance blood sugar levels as does magnesium.

10. Athletic Performance

Vitamin D can strengthen bones and muscle contractions, improve breathing, increase energy levels, and balance blood sugar. Therefore, it has performance benefits for athletes.

11. Mood

Your mood may be affected in part because vitamin D supports both your energy levels and insulin sensitivity. Also, this sunshine vitamin helps to combat the effects of SAD (Seasonal Affective Disorder).

12. Renin-Angiotensin System

Vitamin D deficiency leads to overexpression of renin and thus activation of the Renin-Angiotensin System (RAS), causing renal and cardiovascular injuries by tightening arteries and leading to hypertension. Vitamin D maintains kidney/heart
balance by suppressing the RAS. Magnesium counteracts the effects of renin by relaxing blood vessels.

**CHILDREN AND VITAMIN D**

It is in children that vitamin D deficiency makes its most obvious statement by softening bones and thus creating rickets. Symptoms of rickets include bowed legs, stunted growth, bone pain, large forehead, and trouble sleeping. Complications may include bone fractures, muscle spasms, a curved spine, and diminished mental status.

Because children are still growing, they need extra support for their bones and connective tissue. It’s also possible that vitamin D helps to improve their general health by avoiding conditions like asthma, eczema, and allergies.

A child’s RDA for vitamin D is 400 IU a day to prevent vitamin D deficiency symptoms. Of course, it’s much better for kids to put aside their computer games and soak up the sun while playing outdoors. Unfortunately, north of the 35th parallel you have less sun exposure and thus, less potential for getting your sunshine vitamin D.

Our *D3-K2 ReSet* is 5,000 IU of vitamin D per capsule, and therefore too high for your child, so, instead, look for a liquid vitamin D where 1 drop equals 400 IU.

**PREGNANCY**

Deficiencies in vitamin D have been linked to higher-than-average risks of preeclampsia, a dangerous condition that affects women during childbirth. Magnesium is also a crucial nutrient in pregnancy to prevent and treat preeclampsia and eclampsia. Research shows that using vitamin D and magnesium together decreases the likelihood of needing a caesarean section.
GrassrootsHealth has made vitamin D testing in pregnancy a priority. Here’s what they say about vitamin D dosage in pregnancy.

Vitamin D sufficiency is defined as being over 40 ng/mL (100 nmol/L) as early as possible in pregnancy (before conception is ideal). GRH maintains that there is no standardized ideal dosage because there is a six-fold difference in how people react to supplementation. This means that two women can take 4,000 IU vitamin D daily and one will only have a vitamin D status of 20 ng/mL (50 nmol/L) and another will have 120 ng/mL (300 nmol/L). This conclusion is based on GRH Ongoing Research. It is clear that the amount of vitamin found in the prenatal stage is almost always too low unless you are regularly sunbathing in southern regions or getting vitamin D in other forms.

**CD:** Of course, I say that the reason that one woman may have a higher level of vitamin D than another may be the amount of magnesium that she has in storage. If you have enough magnesium to help metabolize 4,000 IU of vitamin, then you will have a higher level of vitamin D in your blood.

GRH makes an important point that you need to test, not guess. They have a D*Action Project, which just tests for vitamin D. You can also test for vitamin D and Omega-3 fatty acids in the D*action+Omega-3 project. The project we are involved with is the Magnesium* Plus Focus Project testing vitamin D, omega-3 fatty acids, TSH and magnesium. With each testing project you are not only finding out your own nutrient levels but you are joining a research cohort that will help others learn the benefits of nutrient sufficiency from all the data collected.
Why Take Vitamin D In Pregnancy

5 Reasons For the Mother

Multiple research studies have found that vitamin D levels above 40 ng/mL during conception and pregnancy help the mother in many ways:

1. 60% lower risk of preterm birth
2. Virtually eliminates pre-eclampsia
3. Supplementing up to 6400 IU/day is safe and effective.
4. Lower risk of gestational diabetes
5. Lower risk of post-partum depression

4 Reasons For the Baby

Research has found that vitamin D levels above 40 ng/mL during conception and pregnancy help the newborn in the following ways:

1. 70% lower prevalence of common cold
2. 66% lower prevalence of ear infections
3. Improved language development
4. Reduction in the development of type 1 diabetes (in adulthood - what about childhood type 1? not just adulthood)
VITAMIN D DEFICIENCY SYMPTOMS

One of the many vitamin D authors I read recently described the major systems that suffer vitamin D deficiency and listed their symptoms:

1. **Muscles**: muscle cramps, twitches, trembling, vibrating pain, muscle weakness
2. **Energy**: listlessness, lack of energy, permanent exhaustion, constant fatigue
3. **Nervous system**: dizziness, paresthesia, sleep disorders, sudden awakening, a great need for sleep, impaired concentration, restlessness, anxiety, behavioral changes such as aggression, impaired coordination and vertigo, instability when walking and standing
4. **Low blood pressure**: circulatory disorders, daily headaches increasing at noon, feeling cold, freezing, especially hands and feet at night, Raynaud’s syndrome
5. **Bones and Teeth**: pain in bones and joints increasing with exercise, reduction in bone mass, tendency to fractures, bones painful to the touch

The doctor that made this list doesn’t appreciate the fact that vitamin D requires magnesium to work properly. In fact, almost all of the symptoms he lists are also magnesium deficiency symptoms. Shockingly, he doesn’t recommend magnesium to his patients.

In fact, he’s not happy with magnesium at all. He wrote in his book that “The large-scale marketing of magnesium has obscured people’s focus on simple, effective treatments using vitamin D.” He’s completely unaware that vitamin D and magnesium are already best friends and no nutrient is an island!

In the Muscles category, he says that vitamin D deficiency means you also have calcium deficiency, which causes muscle symptoms because the muscles
require calcium to trigger cell contractions. He then says that this calcium deficiency manifests especially at night with pain in the leg muscles.

But I would remind him that calcium tightens muscles and magnesium relaxes them, so both minerals are required to balance muscle activity.

For Energy, he doesn’t realize that magnesium is necessary for 6 of the 8 steps in making ATP energy molecules or that all 8 steps that convert inactive vitamin D to active vitamin D require magnesium.

He says that nervous system symptoms are also caused by calcium deficiency and high-dose vitamin D is the cure! However, a balance between calcium and magnesium is absolutely required for proper nerve transmission.

The author, in his treatment plan, recommends a massive dose of 400,000 IU of vitamin D and then a daily dose of about 4,000 IU. This strikes me as an entirely allopathic approach to treat the numbers and not the patients. This author wants to force your vitamin D levels to surge overnight. What if you are one of those people who doesn’t have enough magnesium to process the massive first dose and you end up with severe magnesium deficiency symptoms?

**Note:** I’ve recently read a half dozen books and dozens of websites on vitamin D and they all have different ways of approaching vitamin D therapy. It’s obvious there is absolutely no consensus or standardization, which is a serious problem for people who want to know how to improve their vitamin D status. Luckily, you can find out how much vitamin D you need to take to reach a certain protective level of vitamin D. You can join our GrassrootsHealth project by going to RnA ReSet and clicking on Research Project.

**VITAMIN D STATS**

Up to 80% of the U.S. population is magnesium-deficient and it seems that 40-75%
of the world’s population is also deficient in vitamin D. The vitamin D deficiency link to rickets, osteomalacia, and osteoporosis is well established. However, vitamin D deficiency is being associated with many other diseases, including tuberculosis, psoriasis, multiple sclerosis, inflammatory bowel disease, type-1 diabetes, high blood pressure, increased heart failure, myopathy, and breast and other cancers.

The latest Institute of Medicine (IOM) report, from 2010, indicates 10,000 IU/day is considered the NOAEL (no observed adverse effect level). They also say that 4,000 IU/day can be considered a safe upper intake level for adults aged 19 and older. But that’s a one size fits all recommendation that is not going to be suitable for everyone.

It is well documented that the darker the skin, the greater the probability of a vitamin D deficiency. Even in southern climates, 55% of African Americans and 22% of Caucasians are deficient.

**VITAMIN D DOSAGE**

Vitamin D researchers, including GrassrootsHealth agree that the dosage of vitamin D should be based on the blood levels of the vitamin and they’re come up with a nifty Vitamin D Calculator to help you figure out how much you require to reach a certain level. For the average individual, 40-60ng/mL is desirable, but if you want to avoid breast cancer or breast cancer recurrence, you will need to strive for a higher level above 60ng/mL.

**Click on this link for The Vitamin D*Calculator**

Enter: Current Weight in lbs; Current Serum Level in ng/mL; Desired Serum Level ng/mL; Calculate and you will see the amount of vitamin D you will have to take to achieve your goal.

**Note:** The Endocrine Society defines vitamin D deficiency as occurring below
20ng/mL and vitamin D insufficiency is below 30ng/mL. The cutoff point of 20ng/mL is the level at which parathyroid hormone becomes elevated in response to lowering levels of calcium.

**DAILY OR MONTHLY DOSING OF VITAMIN D**

The debate about the timing of vitamin D dosing arose from the way vitamin D has been studied throughout the years. There are two separate body systems that vitamin D influences and each has its own mechanism of action. One is the endocrine system that targets cells at a distance and the other is a system where vitamin D targets the same cells that make the vitamin D.

Here are the steps of the endocrine system that target bone and teeth formation.

1. Vitamin D arrives in the body from exposure to the sun, from diet, or dietary supplements.
2. Vitamin D is delivered to the liver, converted to 25-hydroxyvitamin D (25(OH)D), and moves into the circulation where it has a half-life of approximately 3 weeks.

This is why researchers have developed the erroneous conclusion that all you need to do is take huge doses of vitamin D once a month because it will last for 3 weeks.

3. 25(OH)D is then transferred, as needed, to the kidneys where it is converted to the active form of 1,25(OH)2D which has a half-life of only a few hours. This active form helps to control calcium absorption and bone health.

This form of vitamin D only lasts a few hours, which reinforces the need to take vitamin D daily.

4. 25(OH)D is delivered directly to all tissues of the body. Many of these tissues, such as breast, colon, prostate, and brain, can convert vitamin D to its active
form within the tissue. It is through this process that vitamin D can help enable the cells to fight against infections, disease, and autoimmune disorders.

With this knowledge, researchers are beginning to realize that the frequency of dosing matters. For disease prevention and treatment, daily dosing (food, sun, and supplement) is very important! It’s only in the past 10 years that the focus has shifted from bone health to autoimmune disorders, cancer, cardiovascular disease, and infections that the importance of dose timing has been uncovered.

**SUNSHINE = VITAMIN D**

When you visit the GrassrootsHealth website you will find numerous educational blogs about vitamin D. Here is one about the sunshine vitamin. They want to remind you that even though sunshine vitamin D is the best form of vitamin D, people in northern climates are not able to get sufficient vitamin D from the sun.

We are living in an age of 'sun deficiency,' and this has had a negative health impact through increased risk of a number of serious diseases, such as those caused by coronaviruses. These 'diseases of darkness' largely started in the 1800's with industrialization, indoor work, and the rapid movement of populations around the world to places their skins were not accustomed to.

Sunshine provides more beneficial vitamin D effects than what can be gained from supplements alone. Many research studies have been published, even just within the last year, noting that avoidance of the sun contributes to very low vitamin D levels, and with the restoration of vitamin D levels from 20 ng/mL (50 nmol/L) to at least 40-60 ng/mL (100-150 nmol/L), increased prevention of health conditions such as preterm births,
cancers, and respiratory infections can be seen. Important especially now is the potential of reducing the impact and severity of the symptoms caused by multiple types of coronavirus.

A very noticeable trend is that many people of darker skin are more greatly impacted by these diseases. When looking at the complexity of the skin itself and attending to the skin's processing of the sun's rays to vitamin D for human health, a strong relationship can be observed. This goes with the fact that the majority of the population doesn't know how to determine how much sun might be needed for darker skinned individuals.

Data from the 2013-2014 National Health and Nutrition Examination Survey (NHANES) shows that within the United States population, approximately one-quarter (23%) have levels below 20 ng/mL (50 nmol/L) and a vast majority (89%) have levels below 40 ng/mL (100 nmol/L), the bottom level of the range recommended by the GrassrootsHealth panel of expert scientists. Contributing to this deficiency is the decreased amount of time spent outdoors compared to any other time in human history.

VITAMIN K2, VITAMIN D’S BEST FRIEND

I’ve read a lot about vitamin K2, however, Dr. Kate Rheaume-Bleue’s book, Vitamin K2 and the Calcium Paradox and Dr. Mercola’s many articles about Vitamin K2 gave me a grounding in this misunderstood and unrecognized nutrient.

I’m not including vitamin K here because of its effects on the immune system, in fact, it doesn’t appear to have any, however, when you are taking vitamin D, you really should take vitamin K2 along with it to direct calcium toward bones and teeth. K2 polices your calcium, which means it helps to keep your arteries clear of calcium-cholesterol plaque. Unfortunately, a large percentage of the population is deficient in vitamin K2, like they are with so many necessary
Vitamin K has two sides – K1 (phylloquinone) and K2 (menaquinone). Vitamin K1 is a blood coagulant and it’s not the topic of this chapter.

**Functions of Vitamin K2**

Of course, I’m going to bring magnesium into the discussion about the functions of vitamin K2 because they are obvious companions. In fact, they seem to be kissing cousins and further research will likely attest to the fact that they are interdependent.

- Bringing calcium to bones and teeth, preventing osteoporosis and cavities. Magnesium also performs this function.
- Reducing atherosclerosis in arteries such as the coronary, carotid and renal arteries by redirecting calcium misplaced in soft tissues to the bones and teeth. Ditto for magnesium.
- Balancing hormones by increasing testosterone and fertility in men, and decreasing androgens, the male hormones, in women with polycystic ovarian syndrome (PCOS). Magnesium helps increase testosterone in men and is a beneficial nutrient in the treatment of PCOS.
- Helping to produce insulin to stabilize blood sugar and prevent diabetes and associated metabolic problems including obesity. Magnesium has a role in insulin production, reducing insulin resistance, and decreasing obesity.
- Suppressing genes that can promote cancer while strengthening genes that promote healthy cells. Magnesium stabilizes RNA and DNA.
- Enhancing energy utilization during exercise to improve performance. Magnesium is the reigning master of energy by being a cofactor in 6 of the 8 steps in the production of ATP energy molecules in the Krebs cycle.

America might not be big on vitamin K2 research, but a study in Rotterdam called
“Dietary Intake of Menaquinone is Associated With a Reduced Risk of Coronary Heart Disease” came to some important conclusions. Researchers followed 4,809 Dutch adults and found that those with the highest vitamin K2 intake had a 50% reduced risk of arterial calcification and also a 50% risk reduction for cardiovascular events during the study period. Researchers say that because vitamin K2 is only found in some fermented cheeses and organ meats, the lack of it in modern diets has led to the rise of cardiovascular disease.

**Food Sources of Vitamin K2**

Although some websites wax poetic about the top 10 or 20 K2-containing foods, you’re in for a shock when you realize that fermented natto that smells like dirty socks and gourmet goose liver are at the top of the list. If you want to get your K2 from cheese, you have to eat 3.5 ounces to make a dent in your daily requirement. The only food I could conceivably eat would be chicken liver. I can’t imagine eating 3.5 ounces of egg yolks to obtain only 15 mcg of K2 or 3.5 ounces of butter for the same amount. That’s why we include 100mcg of K2-MK7 in each D3-K2 capsule.

<table>
<thead>
<tr>
<th>Food</th>
<th>mcg per 100 g (3.5 oz)</th>
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<tbody>
<tr>
<td>Natto</td>
<td>1100</td>
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<tr>
<td>Goose Liver</td>
<td>369</td>
</tr>
<tr>
<td>Hard Cheeses</td>
<td>76</td>
</tr>
<tr>
<td>Soft cheese</td>
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<tr>
<td>Curd cheese</td>
<td>24</td>
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<tr>
<td>Goose leg</td>
<td>31</td>
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<tr>
<td>Egg yolk</td>
<td>15</td>
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<tr>
<td>Butter</td>
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<tr>
<td>Chicken liver</td>
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**Contraindication:** Unfortunately, there are contradictions to the contraindications for vitamin K2 and the use of warfarin - coumadin blood thinners. Some sources say that Vitamin K2 supplementation higher than 50 mcg per day requires INR monitoring by your doctor because the K2 may undo some of the intended effect of warfarin. However, other sources say that using vitamin K2 can help stabilize INR with patients on anticoagulant therapy. Vitamin K1 is involved with blood coagulation, not K2, so I wonder if there is confusion about the two types. Also, it is standard practice to monitor blood coagulation while on warfarin, so your doctor will tell you if it’s OK for you to continue taking vitamin K2.

**D3-K2 Reset Dosage**

Our D3-K2 ReSet has 5,000 IU of vitamin D3 and 100 mcg of K2. Test your vitamin D levels with the GrassrootsHealth Home Test Kit. It’s located under Research Project at RnA ReSet. With this number you can use The Vitamin D*Calculator to find out how much vitamin D3 you should be taking to reach the level you desire, which may be 40-60ng or over 60ng as I describe above.
CHAPTER FOUR: VITAMIN C

As I say on our *Whole C ReSet* Label, vitamin C is the most popular vitamin in the world. Linus Pauling, two time Nobel Prize winner helped make vitamin C, a household word as the “cure” for the common cold.

Most of my discussions about vitamin C for the past several decades have been about the vitamin C complex derived from food sources. These supplements contain the whole molecular complex, not just one component – ascorbic acid. Recently, however, I’ve been exposed to more information about ascorbic acid in light of COVID-19 and the anti-viral functions of ascorbic acid. I’ve decided that both food-based vitamin C and ascorbic acid are important. It’s not a matter of taking one or the other. You can choose both.

In this section I’ll refer to food-based vitamin C as vitamin C and the non-food-based vitamin C as ascorbic acid.

The multiple components of vitamin C complex that are found in foods include a number of co-factors: factors P, J, and K. The P factors help strengthen blood vessels thus preventing bruising and bleeding gums; K factors help with blood coagulation; and J factors help with the oxygen carrying capacity of the blood. Other components include rutin, hesperidin, bioflavonoids, ascorbinogen, protein chaperones, and various enzymes like tyrosinase.

The enzyme tyrosinase helps break down tyrosine molecules, which are incorporated into thyroglobulin along with iodine and 8 other minerals to make thyroid hormones. Surprisingly, tyrosinase contains copper, which is the main reason that vitamin C assists in the absorption of iron.

You also need the tyrosinase in vitamin C to metabolize tyrosine into the neurotransmitters norepinephrine, epinephrine, and melanin. Ascorbic acid levels in the adrenals are very high. That’s why I recommend extra food-based vitamin C and ascorbic acid (1-2 grams a day) for people with adrenal fatigue.
Norepinephrine and epinephrine secreted by the adrenal glands boost your energy and put your body on high alert by increasing heart rate, blood pressure, and respiratory rate. Of note is that norepinephrine is produced from dopamine, with the help of the amino acids; phenylalanine, lysine, and methionine; minerals: magnesium, manganese; vitamins: C and B6. The more norepinephrine and epinephrine that you produce means you are depleting your nutrient building blocks.

Support for neurotransmitters and the adrenals is important in these times of major stress. Fortunately, the building blocks for the adrenals come from our Completement Formulas. ReStructure supplies all the amino acids along with an extra dose of lysine. ReAline contains methionine and all the B vitamins (methylated and food-based). Whole C ReSet and ReStructure provide vitamin C. ReMyte contains manganese, ReMag is our source of magnesium, and Pico Potassium is our source of potassium.

There are 8 major enzymes that require vitamin C for proper function. Compare this number with the 1,000 enzymes that require magnesium. But that doesn’t make vitamin C any less important.

Several of the vitamin C-dependent enzymes are critical for producing the connective tissue called collagen. Collagen is found throughout the body, but it is especially important for the structure and function of bones, tendons, ligaments, and blood vessels. Lysine is also a building block of collagen and is an added ingredient in ReStructure.

Vitamin C-dependent enzymes help synthesize carnitine, which is essential for converting fats into energy. If you are on a Keto diet, which is high in fats, you will require more vitamin C and ascorbic acid. This is especially true since a Keto diet limits your intake of fruit carbohydrates. Here are the functions of ascorbic acid which comprise most of the vitamin C research.

- Brain development during fetal and post-natal growth, and maintenance of
brain health throughout life, including effective anti-oxidative defense

- Efficient communication between nerve cells
- Maintenance of healthy skin and connective tissue
- Wound healing
- Structural integrity and function of heart and blood vessels
- Growth of new blood vessels
- Proper structure and function of circulating blood cells
- Formation of the cells of our immune system (white blood cells)
- Maintenance of a healthy and effective immune response
- Generation and storage of energy in the ‘power plants’ of our cells, the mitochondria.

**LET’S ASK THE VITAMIN C EXPERTS**

I’ve been speaking with several vitamin C experts recently on my radio show and I thought I’d let them tell you the story about the most talked about vitamin in the world. I’ll start with present day experts and then go back 50-70 years to pioneering doctors who were treating viruses with high dose intravenous vitamin C.

**DR. RHONDA PATRICK**

Dr. Rhonda Patrick is an American biomedical scientist, researcher, and entrepreneur. Born in 1978, she missed being a Millennial by a couple of years, but I think she appeals to the younger generation. Dr. Patrick has a gift for translating complex scientific topics into insights in her videos, podcasts, and articles. She's dedicated to the pursuit of longevity and optimal health—and shares the latest research on nutrition, aging, and disease prevention with her growing audience.

I subscribe to Dr. Patrick’s newsletter and was excited to see a publication simply titled “Vitamin C.” It’s a 42-page, 20,000-word, up-to-the minute description
of the benefits of vitamin C that’s tuned in to our current COVID-19 crisis. She’s included almost 200 references and you should print this up and give it to your doctor as evidence that you should have IV vitamin C if you have symptoms of COVID-19. Here is how Dr. Patrick begins her paper:

Vitamin C, also known as ascorbic acid, is an essential nutrient, widely recognized for its antioxidant properties. These properties arise from its potent redox potential due to its capacity to donate electrons to oxidized molecules. Even in small quantities vitamin C can protect critical molecules in the body such as proteins, lipids, carbohydrates, and nucleic acids (DNA and RNA) from damage by reactive oxygen species, which are generated during normal metabolism, by active immune cells, and through exposure to toxins and pollutants (e.g., certain chemotherapy drugs and cigarette smoke). The vitamin also plays a critical role as a cofactor—a molecule that assists enzymes in chemical reactions. This dual nature of vitamin C means that it is instrumental in multiple physiological processes, including those involved in the biosynthesis of collagen, carnitine, and catecholamines. As such, vitamin C participates in immune function, wound healing, fatty acid metabolism, neurotransmitter production, and blood vessel formation, as well as other key processes and pathways.

With all this incredible information on the scope of vitamin C and its ability to ward off viruses, it’s quite chilling to see that Facebook has banned articles that talk about vitamin C being helpful to prevent or treat COVID-19. Instead, we are being forced into a tunnel of expensive drugs that haven’t even been properly tested and ineffective vaccines to treat COVID-19.

**DRS. LEVY, GONZALEZ, AND MARY**

Vitamin C experts and practitioners, Dr. Thomas Levy, Dr. Michael Gonzalez, Dr.
Mignonne Mary, and Dr. Charles Mary were all on my radio show March 30, 2020. Please listen to the entire show to learn to support the immune system against viruses. Many customers have told us that they learned so much practical information on this show that they could take care of their health with confidence using our *Completement Formulas* and extra vitamin D, ascorbic acid, and zinc – all of which we are offering to our customers.

**DR. FREDERICK KLENNER**

Dr. Klenner was a pioneer in the application of vitamin C for viral infections. In 1949, he published a report on his treatment of 60 cases of polio using oral and injectable vitamin C. He achieved a cure in 57 out of 60 cases in three days and the other three patients the cure took five days. Below is an excerpt from his published paper “The Treatment of Poliomyelitis and Other Virus Diseases with Vitamin C.”

In a previous report dealing with the antagonistic properties of ascorbic acid to the virus of atypical pneumonia, mention was made of the fact that other types of virus infections had responded favorably to vitamin C. This paper is to present these findings as well as the results of subsequent studies on the virus of poliomyelitis, the viruses causing measles, mumps, chickenpox, herpes zoster, herpes simplex and influenza. Further studies with the virus of atypical pneumonia will also be discussed.

A review of the literature in preparation of this paper presented an almost unbelievable record of similar studies. The years of labor in animal experimentations; the cost in human effort and in “grants,” and the volumes written, make it difficult to understand how so many investigators could have failed in comprehending the one thing that would have given positive results a decade ago. It was Jungeblut who unequivocally said that
‘vitamin C can truthfully be designated as the antitoxic and antiviral vitamin.’

An online collection of Dr. Klenner’s and Dr. Cathcart’s papers can be found at the following University of Helsinki link. For even more ascorbic acid research, Ascorbate Web offers an historical compendium of 20th century medical and scientific literature on ascorbic acid in the treatment and prevention of human and animal diseases. The entries range from 1935-1999. This website also offers a brief overview of vitamin C articles (2000 - 2013) and a link to a PDF copy of the book The Healing Factor by Irwin Stone.

**DR. ROBERT CATHCART**

Another famous vitamin C practitioner is Dr. Robert Cathcart, who successfully treated over 20,000 patients with very large doses of vitamin C, beginning in 1969. His doses could be as high as 150,000mg per day resulting in remarkable and miraculous results and no ill effects. You may be interested in a short biography of Dr. Cathcart and you can read his 1991 paper called “A Unique Function of Vitamin C” online. A bibliography of his work can be found in Appendix C.

**Ascorbic Acid versus Food-Based Vitamin C**

Dr. Levy answered the following question that Jonathan asked on my March 30, 2020 radio show. “I’ve heard that ascorbic acid is not a true form of vitamin C and causes other issues. This comes from holistic recommendations to find sources of all natural vitamin C. Can you comment please?” Dr. Levy said:

In a nutshell it’s really outlandish. Vitamin C is ascorbic acid; ascorbic acid is vitamin C. The part of ascorbic acid that is the essence of vitamin C is the ascorbate anion. You could have sodium ascorbate, calcium ascorbate, or magnesium ascorbate. They’re all vitamin C with a different cation
attached to them. Now, with regard to food-based vitamin C, let me say that vitamin C is the premiere antioxidant in your body. But all antioxidants work together. I like to say you want to establish in your body an optimal matrix of different antioxidants all working together to regenerate each other back to the reduced form once they are oxidized by a toxic or oxidative stress.

If you eat perfect food, it’s only helpful to the degree that it metabolizes down to a molecule that is an antioxidant with electron-donating capacity. So, in that regard, yes, the more different, wonderful antioxidant substances that you take with vitamin C, the better. This is where a lot of confusion comes in because when a company tries to sell their food-based product, they put down ascorbic acid.

We have 80 years of literature that shows ascorbic acid by itself or as sodium ascorbate, most prominently, has cured a whole host of viral syndromes, bacterial syndromes, even protozoa and fungal syndromes, and neutralized an almost uncountable number of toxins. Some people say crazy stuff like ascorbic acid can cause cancer or it can cause kidney stones. The bottom line is that it’s been around for 80 or 90 years. It’s dealt with many symptoms and conditions all by itself without side effects. But, if you want to take additional antioxidants, just like additional good nutrition, then great. But, just don’t minimize what ascorbic acid has done repeatedly, documented in the literature, all by itself.

I then summed up Dr. Levy’s remarks. “So, you’re saying that the molecule of ascorbate is and always will be a molecule of ascorbate, wherever it comes from, and that it’s mainly this transfer of electrons back and forth that keeps the antioxidant of that ascorbate working.” Dr. Levy agreed.

Dr. Levy replied and added another excellent piece of information on the association of vitamin C and glucose, which I have already noted in the
Introduction. He further explained high dose ascorbic acid saying:

Compared to the other animals in the animal kingdom, we have a vitamin C gene, but humans have lost the ability to transcribe it inside our liver to make vitamin C from glucose. When you look at an animal, about the size of a human, they’ll make roughly 10,000mg of vitamin C a day and deliver it directly into the blood stream which means an overwhelmingly much larger amount of supplementation will be needed to ever approach the amount of delivery from your liver. So, this is why vitamin C is unique in needing to be supplemented. If someone asks, ‘If I eat a quality diet, I should get enough.’ The answer is ‘Yes, for most things but not for vitamin C.’

**Vitamin C and Kidney Stones**

Dr. Levy was also asked the age-old question about vitamin C causing kidney stones in the form of calcium oxalate. Dr. Levy answered:

Biochemically, vitamin C can break down into small amounts of oxalates. Since 85% of kidney stones are composed of calcium oxalate, people who oppose high dose vitamin C immediately jump on the bandwagon and say, “Vitamin C causes kidney stones.” That is complete bunk. Lots of foods break down into oxalates, which are readily excreted.

Instead, you have to look at the calcium. People who ingest huge amounts of dairy, drink a lot of milk, and take calcium supplements are going to be the ones that get stones. When you stop dietary calcium, when you stop the calcium supplementation, and take generous doses of magnesium, vitamin C, vitamin D, and vitamin K2, you not only prevent kidney stones, you actually help dissolve pre-existing stones. So, vitamin C is inconsequential with regard to causing kidney stones, even though it
does metabolize down to oxalate. So, I like to say when this issue comes up, it’s simple, four words: No calcium, no problem.

In fact, Dr. Cathcart, who has given in the course of his life hundreds of thousands of grams of vitamin C orally and intravenously never encountered a single person in which he caused stones. As a matter of fact, the higher your blood level of Vitamin C – they have studies to show this - the lower the incidence of kidney stones.

**DR. MICHAEL GONZALEZ**

Dr. Michael Gonzalez is a professor at the Nutrition Program at the School of Public Health on the Medical Sciences Campus of the University of Puerto Rico. He is an author of over 100 scientific publications. He is an active member on several scientific journal editorial boards. At present, he is a consultant for the Center for Improvement of Function, Wichita Kansas, and has obtained several awards for his work on nutrition and cancer.

On the radio show, when we talked about IV vitamin C being used for the treatment of COVID-19. Dr. Michael Gonzalez stepped in and said:

A lot of people are using vitamin C (for COVID-19), but I think that the doses they are using are very low. I think that may even hurt its acceptance in the sense that these small doses might not have the impact that the large doses do. We have a lot of experience treating influenza. We have treated Chikungunya, mononucleosis, and Zika virus but not coronavirus. The experience of vitamin C is that it has many anti-viral mechanisms, some direct and some indirect.
Ascorbic Acid Antiviral Mechanisms Provided by Dr Gonzalez

Direct Antiviral Mechanisms
1. Disruption of viral capsid (capsule) by structurally interfering with the sugar molecule of its glycoprotein envelope.
2. Damage of the viral capsid due to ascorbic acid’s Redox (detoxification) capacity when given in pharmacological doses.
3. Inhibition of viral replication when provided in pharmacological doses by creating a hostile environment for this activity to occur, in addition to inhibiting viral replication enzymes.

Indirect Physiological Mechanisms
4. Increase cellular immunity of white blood cells (neutrophils, macrophages, lymphocytes, NK cells).
5. Increase humoral immunity (B cells, antibodies).
6. Increase antiviral proteins (Interferon).
7. Increase energy by providing necessary electrons and electron movement for mitochondrial ATP generation.
8. Competes for sugar uptake, the main source of fuel for pathogenic organisms.
9. Potent, quick antioxidant action when provided in proper doses to prevent the dangerous and severe pathological cascade of the cytokine storm.
10. Maintain structural integrity of cells by favoring collagen formation.

See Appendix B for the 25 Scientific References that accompany the above list of vitamin C antiviral attributes.
A listener asked how much vitamin C should be used intravenously. Dr. Gonzalez answered:

We are advising at least 1 gram (1,000 mg) three times a day. People who do not have the chance of getting IV vitamin C, they may use the bowel tolerant dose of 10 grams a day or taking enough vitamin C until you develop diarrhea. That’s the cut off dose. Normally, people who take 10, 12, 15 grams of vitamin C get diarrhea. But, when you are sick, you will absorb more without getting diarrhea because your body needs more. With a disease like this COVID-19 you probably need 30 grams to 50 grams. But once you start getting diarrhea, you have to cut back to the amount that won’t give you diarrhea. Let’s say you got to 50 grams and had diarrhea; you probably only need 45 grams in order to battle this virus. The bowel movements will tell you when you have to decrease your dosing.

Also, you are better off taking 25 grams in a divided doses – 5 grams every 5-6 hours – rather than taking a one-time dose of 50 grams. Obviously, what you want is a large dose on a frequent basis. It’s extremely important, especially for infectious conditions, to keep a significant level of vitamin C in the blood as close to around the clock as you can. The optimal thing if you are in a hospitalized situation would be to have an infusion pump so you get a certain amount of vitamin C around the clock for a total of 25, 50, or more grams a day.

**Vitamin C and the Endothelium**

In the Introduction I mentioned that the endothelial lining of the blood and lymph vessels are targeted by COVID-19. I said that COVID-19 affects the H2 receptors, which are on the endothelial surface layer causing inflammation. In Chapter Two, I noted that the virus attaches to the histamine-2 receptors of the endothelial cells and that magnesium is a necessary cofactor for the function of the histamine
degrading enzyme, diamine oxidase. In Chapter Three I talked about the endothelium being at risk in patients who have low levels of vitamin D. Now, in Chapter Four, we’ll review the “Role of Vitamin C in the Function of the Vascular Endothelium.” Here is a slightly edited comprehensive, but complex abstract:

Vitamin C, or ascorbic acid, has long been known to participate in several important functions in the vascular bed in support of endothelial cells. These functions include increasing the synthesis and deposition of type IV collagen in the basement membrane, stimulating endothelial proliferation, inhibiting apoptosis, scavenging radical species, and sparing endothelial cell-derived nitric oxide to help modulate blood flow. Although ascorbate may not be able to reverse inflammatory vascular diseases such as atherosclerosis, it may well play a role in preventing the endothelial dysfunction that is the earliest sign of many such diseases.

Beyond simply preventing scurvy, evidence is mounting that ascorbate is required for optimal function of many dioxygenase enzymes in addition to those involved in collagen synthesis. Several of these enzymes regulate transcription of proteins involved in endothelial function and proliferation. More recently, ascorbate has been found to acutely tighten the endothelial permeability barrier and, thus, may modulate access of ascorbate and other molecules into tissues and organs.

Many diseases and conditions have either systemic or localized cellular ascorbate deficiency as a cause for endothelial dysfunction, including early atherosclerosis, sepsis, smoking, and diabetes.

**DR. ANDREW SAUL**

Dr. Saul spearheads the *Orthomolecular News Service* and was a guest on my
show April 2, 2018. In a May 21, 2020 interview with the *Epoch Times* called “Censoring Evidence on Vitamin C,” Dr. Saul explains how vitamin C can help prevent and treat COVID-19 but you aren’t going to find that out from mainstream media. Here is an extensive excerpt from the online edition.

Vitamin C is an antioxidant. So, it goes after free radicals. We’ve all heard about that. When somebody is seriously ill with a disease like COVID, their need for vitamin C skyrockets. If you test people with pneumonia, influenza, or COVID-19, you can measure and see that their vitamin C levels are low. So, the body is actually consuming it in this battle to recover.

Another thing that vitamin C does is it strengthens the bonds among the cells of the body. The substance that cements all our cells together is made out of collagen. It’s what keeps your joints and skin together. It’s what keeps your blood vessels intact. When you don’t have enough vitamin C, you don’t make collagen. The connective tissue becomes weak and you get scurvy. In the old days, wherever you touched a sailor with scurvy, they would instantly have a bruise because the little blood vessels would all break. Vitamin C enables the manufacture of collagen so that you don’t bleed into yourself. Well, in COVID-19 the lungs are just full of blood. If you don’t have enough vitamin C, those blood vessels are going to rupture, so the person will fill with blood and die.

Vitamin C also enables our white blood cells as an army that fights invaders; white blood cells require vitamin C to function.

And in high enough doses, vitamin C is actually an antiviral. This goes back to the ridiculously-sounding high doses with Dr. Klenner and Dr. Cathcart. Klenner was reversing viral pneumonia in 52 hours.

In every nutrition textbook ever written, it says that vitamin C is essential for a properly functioning immune system. Well, if you have
COVID, the one thing you want more than anything else is a properly functioning immune system. Too little vitamin C will cause the immune system to be weak or cause the immune system to work wrongly.

Pneumonia and SARS (Severe Acute Respiratory Syndrome) are what kills COVID patients. You can also get pneumonia from a cold that just gets worse. It happened to me many years ago. I had a severe cold; I didn’t take care of myself and I got double viral pneumonia. So, I decided to do what Dr. Cathcart did—I took 2,000mg of vitamin C every six minutes I was awake. I had a high fever and I was coughing. In three hours, my temperature came down three degrees and my cough stopped. This is exactly what Klenner and Cathcart reported in their medical papers.

All of this makes it a plausible therapy for COVID. What people are being told is that this is being looked into, but there’s no evidence or proof, so don’t do it because we’re not going to have the results until November. Well, we can’t wait until November. So, we’re going to the doctors who are getting the results now.

The doctors who are using vitamin C for COVID all over the world are doing what is best for the patient. And this is the Hippocratic Oath.

Doctors are morally and ethically bound to do everything they can for the good of the patient. If they don’t know about vitamin C, we can understand why they might not use it. But now, the cat is out of the bag. Doctors know other doctors who are using vitamin C. And now, it’s a political battle to tell them to not do it.

**TOM TAYLOR**

Tom Taylor is an avid vitamin C enthusiast and member of the *Orthomolecular News Service* giving some great advice about vitamin C. He calls his article
“Smothering The Fire: How Vitamin C Can Stop Viral Infections Quickly.”

The Vitamin C Fire Smothering Technique: Four Keys

The first key is to pay attention to your early indicators that you are about to get sick. For me that is stuffiness in my left nostril. Years ago, it was a sore spot in the back of my throat. For you it may be different. The important thing is to be aware of your early warning indicators of illness.

The second key is to be very quick to start the high dose vitamin C at your first indication of illness. My experience has taught me to go immediately to 2 grams an hour (not per day) and keep the rate up for a few hours or for the whole day or evening. When this gives you enough vitamin C, your first indication of a shift is that you suddenly perk up and feel, maybe not great, but better.

For some nasty illnesses, four grams an hour or one gram every fifteen minutes will be the solution to stop the viral infection. Dr. Cathcart in his video and papers reports a young woman who took around 450 grams in two days to bring a case of mononucleosis under control.

The third key is closely or evenly spacing the dosages. All sources agree that vitamin C has a very short half-life in your body, on the order of a few hours when you are well. When you are sick and heavily stressed, the sources say the body can easily consume a gram or more in fifteen minutes.

What happens if you take too much? After starting to feel better, the next indicator is you start feeling a little gassy with some flatulence. This is annoying but OK. However, in the rare event you wildly overdo it, you will clean out your bowels for a few hours, but this is usually a very short-
term event. Though unpleasant, it far beats the alternative of being sick and it could be looked upon as a detoxification. Dr. Cathcart called this method of trial-and-error with the dose "bowel tolerance,"

**The fourth key** is to keep vitamin C handy. Just as you would small bandages or lip balm.

In a section called "What about babies?" Tom gave the following advice: "Experts like Helen Saul Case says a gram of vitamin C per year of age is no trouble at all for a healthy baby." I refer you to Helen’s blogs about using vitamin C for children if they have to receive a vaccination.27,28 In the meantime, here is an excerpt from Helen Saul Case’s blog, “Vitamin C Prevents Side Effects From The MMR Vaccine:"

Years ago, before we learned to give huge doses of vitamin C, before, during, and after immunizations, our daughter (then age 15 months) had a severe reaction to the DPT (diphtheria, pertussis, and tetanus) vaccination: she lost her coordination, was screaming, falling over, and spiked a high fever. High-dose, saturation-level vitamin C cured her reaction to the DPT vaccine and taught us an important lesson: give more vitamin C. Much, much more. Now, in order to protect our children from any vaccination side effects, we give very high doses of vitamin C before, during (yes, even at the doctor’s office) and after immunizations.

Our five-year-old, 37-pound (about 17 kg) daughter received saturation-level doses of 8,000 to 11,000 milligrams (mg) of vitamin C every day the week before her first MMR vaccination. The day of her shot, she happily and comfortably held 24,000mg. For the next couple of days after the shot, her dose was reduced to 20,000mg/day. Then, for the next four days, her vitamin C dose went down to 15,000mg/day. The next four: 14,000mg, 13,000mg, 12,000mg and 11,000 mg per day respectively.
For the next several weeks leading all the way up to her second MMR shot, she was getting between 8,000 and 11,000mg of vitamin C each day.

Tom Taylor finishes his article by reminding us that “Most animals do make their own vitamin C naturally. The exception in the pet world is the guinea pig. They, like humans and other primates, do not make their own vitamin C.”

WHOLE C RESET AND ASCORBATE DOSAGE

With the COVID-19 crisis alerting us to the need to protect our immune systems, I’m in favor of taking 1-2,000mg of ascorbic acid daily, along with 500mg of Whole C ReSet. You could take 2,000mg of Whole C ReSet but that would mean swallowing 8 capsules. I certainly don’t think ascorbic acid is dangerous and this chapter will show you the proof of using it intravenously for acute viral infections and taking high dose ascorbic acid orally to prevent and treat viral infections.

Note: We are making Ascorbate Plus, an ascorbic acid powder for our customers, which will be available before September 2020. In it we will include our catalytic factor – RnA Powder.
CHAPTER FIVE: PICO SILVER

I’ve been aware of silver as an immune booster for many years. Silver in the alternative health community is usually marketed as colloidal silver – a suspension of silver particles in water. I have recommended a couple of legitimate colloidal silver products over the years. However, I personally have never felt any benefit when I have taken them.

One day I had a flash of inspiration. I realized our chemist could make a superior and safe form of silver by applying the proprietary techniques used in transforming our ReMag, ReMyte, and Recalcia minerals into stabilized ions.

There is widespread controversy about the use of silver supplements. Is it safe, is it effective, how do I know what product to trust? In my heavily referenced 32-page book called Pico Silver: Clearing Up the Controversy I explain how Pico Silver is not a colloidal silver compound. It is a stabilized ion of silver, which makes it both safe and effective. In Total Body Immunity, I’ll rely heavily on my Pico Silver book to explain why Pico Silver should have a prominent place in your supplements cabinet.

Attributes of Pico Silver Ions

Picometer-sized ions of silver perform the following functions:

1) Attach to WBCs to seek and destroy bacteria, viruses, and fungi and augment the myriad other functions of WBCs. Being able to attack viruses and bacteria at the same time is very important for treating COVID-19 because bacteria often infiltrate the lungs of patients with any type of influenza causing pneumonia. You’ll notice that a standard treatment for COVID-19 is a Z-Pack of Azithromycin.

2) Detoxify the debris from dying organisms, thus curtailing the Herxheimer
reaction as they fight infection. This function is extremely important for COVID-19 patients because it’s often the huge deluge of dead viruses and their toxins that adds to fatalities. (A Herxheimer reaction occurs with the buildup of dead microorganisms and their toxins when they are being killed.)

3) Stimulate stem cell production enhancing all tissue lines and participating in tissue regeneration including remarkable wound healing. For COVID-19 patients, I think of the incredible “wounds” to their lungs, kidneys, and hearts that Pico Silver can help heal.

4) Do not build up in tissues. Pico Silver is a stabilized ion of silver that works at the cellular level; It is not a silver compound that has the potential to build up in soft tissues.

5) Enhance the intestinal Microbiome. This is very important. Five out of six studies show that Pico Silver either does not affect or enhances the intestinal Microbiome

For references to the above, please download my book, Pico Silver: Clearing up the Controversy.

My Pico Silver Testimonial

When the first samples of Pico Silver arrived at my house, I had just come home from the mainland and woke up the following morning with an airplane virus. My throat was sore, I had a headache, and my nose and ears were getting clogged up. Throughout the day I took 6 teaspoons of Pico Silver. The next morning, I woke up feeling absolutely normal.

As I continued taking a couple of teaspoons a day and over the next few days, I found that my nasal mucus membranes hardly produced any mucus from eating dairy, as usually happens. The reduction of those symptoms made me realize
my yeast overgrowth was under control. I was quite amazed. As I’ve already shared, I have never had any positive reaction from any colloidal silver that I had taken in the past. So, this was a new and welcome phenomenon.

**Why Is Pico Silver So Powerful?**

Let me share why I think silver ions are so important for the body as our collective health declines and as disease is shamefully monetized by the drug industry. As I’ve said many times, I’ve been involved in the natural health world for over 50 years, which have given me plenty of time to see trends and patterns.

Here’s what I know that relates to the immune system and *Pico Silver*. I think silver is a necessary nutrient in the body because it is systematically concentrated in the body to a much higher level than occurs in nature. Since most minerals I’ve studied are depleted in our soil and water, I’m sure the same can be said for silver. Silver ions, which form 98% of our *Pico Silver*, weaponize white blood cells (WBCs) to do their work. Silver assists the WBCs and the immune system to attack infectious organisms. But what I know from my research on yeast overgrowth is that infectious organisms have gained the upper hand and overwhelm our ability to keep them under control. That’s why daily supplementation of *Pico Silver* seems prudent.

At the same time that we’ve allowed yeast to overgrow with the excessive use of antibiotics, steroids, the birth control pill and a high sugar diet, allopathic medicine, following its insane model of “disease care,” has increased the use of antibiotics and other life-destroying drugs. According to a medical discipline called Total Biology, the body will increase the cell production of certain tissues in order to solve a conflict. When the conflict is resolved, the body depends on yeast, viruses, and bacteria to break down that excess tissue. This function demonstrates the genius of the body and depends on the right balance of organisms. (Total Biology is a French offshoot of German New Medicine.)
We completely destroy the balance of organisms in the body when we allow yeast to overgrow, which then allows more viruses and more pathogenic bacteria to invade our bodies. When allopathic medicine finds high rates of these abnormal organisms, they just give more antibacterial, antiviral, and antifungal drugs, further throwing our intestinal Microbiome off balance. The simple and effective solution is to:

1. Support the structure and function of the whole body with well-absorbed vitamins and minerals including *Pico Silver*

2. Follow The Yeast Management or The Yeast Detox Protocol, which you can find in my book, *ReSet The Yeast Connection*

**Pico Silver and the Immune System**

In my *Pico Silver* book, I discuss how the stable ions of silver in *Pico Silver* stimulate stem cells to enhance all tissue lines, which means they participate in tissue regeneration. They also assist the white blood cells in mopping up the byproducts of killing infectious organisms thereby diminishing Herxheimer (die off) reactions. People often refer to this type of event as detoxification.

What WBCs do is multifaceted and shared by five types of WBCs: Basophils, Neutrophils, Eosinophils, Monocytes, and Lymphocytes. What becomes evident when you study these WBCs is that they are not just killing machines that sometimes go rogue, which is the way they are viewed by allopathic medicine. This is TMI (too much information) for this eBook but you can read more about these amazing WBCs in *Pico Silver: Clearing Up The Controversy*.

**SILVER AND COVID-19**

The FDA and FTC have issued warnings to many silver companies to stop making
claims that their products could help in the prevention or treatment of COVID-19. I’m not going to make any claims for Pico Silver since we haven’t done a study to prove its effectiveness for this virus. Until we do, you can safely use Pico Silver to support the structure and function of your awesome immune system.

PICO SILVER USES

In Pico Silver: Clearing Up The Controversy I’ve listed 22 uses for Pico Silver. I’ll excerpt the five that are related to colds and flus.

1. **Colds, sort throat, flus**: You can take up to 1 tsp every 2 hours while awake for a total of 6 tsp. You can swish and swallow straight Pico Silver or put in 2 ounces of water and swish, gargle and swallow.

2. **Cough, Pneumonia**: One teaspoon in a nebulizer and inhale for 10 minutes; repeat several times per day.

3. **Nasal congestion**: Hold several drops in your palm and snuff several times a day.

4. **Sore throat, gum infection, dental infection**: Gargle or spray for gums and throat.

5. **Conjunctivitis**: 2 drops in each eye several times a day.

6. **Ear infections**: fill ear with 5-10 drops and leave in for 5 minutes.

PICO SILVER DOSAGE

The dosage can be quite variable from 1 tsp to 6 tsp, depending on the severity of your symptoms. Remember that if you are treating influenza you will also be calling upon Whole C ReSet, Ascorbate Plus, D3-K2 ReSet, Flora ReVive, and ReMag, which
means that moderate doses of all of them will cover all the bases.

When you are taking *Pico Silver* for lower intestinal complaints, add 1-2 tsp of aloe vera juice to help pull the silver into your intestines. Otherwise it will be absorbed higher up.

In Chapter 8, you will see the instructions for Vaporizing *Pico Silver* to support lung function.
CHAPTER SIX: PICO ZINC

I’ve talked about the wonders of zinc in my ReMyte & ReCalcia eBook and I’ll include those words here. Zinc for immune system support should be taken in low doses daily, as you are doing with ReMyte, because zinc does not have storage sites in the body. However, higher doses of Pico Zinc may be necessary to support the immune system against viral attacks, but they are not to be taken long term. I’ll describe why zinc is important below but first I’ll make my dosage recommendations very clear.

Let me remind you first that taking Pico Zinc and all the immune boosting formulas will be doing much more than just supporting the immune system. Already we have reports of interesting health improvements with people taking extra zinc. Our own Ginney Sanders, AKA Ginney Almighty, had a year-long facial rash that suddenly disappeared after she too some extra Pico Zinc for only a few days. Zinc is known for its benefits to ‘skin, hair, and nails’, so that makes sense. I’m sure we will be hearing lots more stories like this from our customers.

The Importance of Zinc

I was alerted to the crucial role that zinc plays as an antiviral when I saw it being used successfully, along with hydroxychloroquine, to treat COVID-19. On my March 30, 2020 Dr. Carolyn Dean Live Radio Show I spoke with several vitamin C experts and we also delved into the immune system benefits of zinc. Here is Dr. Thomas Levy’s experience:

There is an abundance of literature showing that zinc, as an ion, is very effective in combating infections. You’ve all heard of zinc lozenges for sore throats. Zinc, however, has a very difficult time getting inside the living cell but studies show that once zinc is inside the cell, it is a powerful anti-viral.

As it turns out, hydroxychloroquine is an ionophore, which is just a big
word meaning that it opens up cell mineral ion channels that allow zinc ions to easily get inside the cell. Once inside a cell that is infected with a replicating virus, the zinc completely stifles the viral RNA polymerase that allows the virus to replicate and ends up resolving the viral infection very quickly. So, this is a very consistent and reliable outcome.

So, everybody understands, you never take high dose zinc long term; it can be toxic. You don’t want to take that on a regular basis, you don’t want to take more than 20-40 mg. But, in a case where you are fighting something like COVID-19, you can load up on it and really sharpen the knife of the hydroxychloroquine.

*Pico Zinc*, because of its ability as a stabilized ion of zinc, can readily enter cells and act as its own ionophore without needing the help of hydroxychloroquine.

**The Endothelial Connection**

I’ve mentioned how magnesium, vitamin D, and vitamin C all have a role to play in keeping the endothelial lining of the blood vessels intact. It turns out that zinc is necessary to maintain the health of cardiovascular cells and the endothelium. Low levels of zinc in the body can cause a deficiency in the endothelial barrier, which leads to inflammation and potential buildup of calcium/cholesterol plaque.

**ZINC BASICS**

We have about 3 grams of zinc in our bodies. Around 1934, zinc was declared essential for humans and animals. It was several years before the enzymes governed by zinc began to be researched. Zinc-containing enzymes are involved in many aspects of metabolism, many of them overlapping and intersecting with magnesium enzymes.

Zinc, according to the NIH Office of Dietary Supplements, plays an important role...
role in the structure and function of the immune system. They say it is a cofactor for nearly 100 enzymes in the body. Other sources say that number is closer to 300 with about 3,000 body proteins out of 100,000 requiring and utilizing zinc.

Zinc is also involved in protein synthesis, cell signaling, neurotransmission, and vision. Specifically, for the immune system, it influences T-cell activity, cytokine production, and phagocytosis.29 It’s found in skeletal muscles and is especially high in white and red blood cells, the retina of the eyes, liver, kidneys, bones, and pancreas. Semen and the prostate gland also contain enough zinc to make it an important mineral in reproduction.

The NIH only admits that zinc has a role functions 1 to 7, below, however dozens of benefits are swirling all over the internet. We want zinc to support the structure and function of the immune system and any other benefits are a bonus! Here is a sampling of the many attributes of zinc:

1. Protein synthesis

2. Wound healing (zinc travels to wound sites: burns, abscesses, injury, and surgery)

3. DNA synthesis

4. Cell division

5. Supporting normal growth and development during pregnancy, childhood, and adolescence

6. The sense of taste and smell.

7. Blood formation

8. Not just DNA, but also RNA, and protein metabolism
9. Fatty acid and prostaglandin metabolism

10. Vitamin A metabolism

11. Growth phases (fetal, infancy, childhood, and puberty, ensuring proper physical, mental, and sexual development)

12. Regulation of sex hormones

13. Reproductive organ function and fertility (miscarriage, birth defects, and immune deficiency are common effects of zinc deficiency)

14. Membrane stabilization

15. Free radical protection with superoxide dismutase with zinc as a cofactor

16. Inhibiting intestinal absorption of toxic heavy metals (such as lead and cadmium)

17. Regulation of brain neurotransmitters (GABA, glutamate, and the storage of histamine)

18. Sensory functions not just taste and smell but also vision and hearing.

19. Immune defense (cellular and antibody immunity)

20. Necessary for many functions in the thyroid including production of T3.

21. Like magnesium, zinc is a calcium antagonist or calcium channel blocker, preventing calcium from improperly activating muscle and nerve cells and depositing in soft tissue in the body.

22. Zinc is required for the synthesis of thyroid hormones and the delicate conversion of T4 to T3. Thus, zinc deficiency can result in hypothyroidism.
23. Conversely, thyroid hormones are essential for the absorption of zinc. Researchers have found that the hair loss attributed to hypothyroidism may not improve with thyroid hormone replacement unless zinc supplements are added.

**Zinc and The Common Cold**

I keep thinking that since allopathic medicine can’t “cure” the common cold, what chance does it have against COVID-19? But alternative medicine has lots of evidence that zinc can help colds and flus. My favorite non-biased research group – The Cochrane Reports published a 2011 meta-analysis called “Zinc For The Common Cold.”

Data from 13 randomized double-blind, placebo-controlled trials totaling 1300 subjects concluded that zinc lozenges or zinc syrup reduced the duration and symptoms of a cold in otherwise healthy people when given at the first sign of symptoms. When zinc was taken during a five month trial, it reduced the incidence of colds by 37%.

I remind you that just using zinc as if it were a drug to “treat” the common cold is not the way the immune system works. It wants magnesium, vitamin C, vitamin D, probiotics, silver, and zinc working together to give the best possible outcome.

An article, “Adequate zinc eases pneumonia in elderly” reported on a study done in nursing homes. Those patients with higher zinc levels had a reduced incidence and duration of pneumonia. This report is especially important in light of the patients hardest hit with COVID-19.

**Zinc Deficiency Symptoms**

- Growth retardation

Carolyn Dean MD ND
• Low blood pressure
• Retarded bone growth
• Loss of appetite
• Loss of smell and taste senses
• Depression
• Rough skin/Pale Skin
• Acne
• Weight loss
• Diarrhea
• Hair Loss
• Fatigue
• White spots under fingernails
• Delayed
• Erectile dysfunction

**Causes of Zinc Deficiency**

The causes of zinc deficiency are somewhat similar to the causes of magnesium deficiency, such as:

• Zinc is depleted by the body during pregnancy and nursing.

• There is a lack of zinc in the soil and, therefore, the food supply.

• The body may absorb only about 25% of the zinc that does find its way into the diet.
• Fast food diets are low in zinc.
• Strict vegetarian diets are low in zinc. Animal products have more zinc.
• Alcoholism promotes zinc deficiency.
• Excessive sweating in athletes or laborers depletes zinc.
• Use of cortisone or steroids creates zinc deficiency.
• Zinc is lost by metabolism of the birth control pill.
• Copper IUDs cause copper build up and depletion of zinc.

Losing Zinc

Many symptoms and diseases burn off zinc such as the following:

1. Severe skin rashes like psoriasis. A vicious cycle can occur, where a zinc-dependent enzyme involved in the lipid synthesis of skin cells is not functioning properly, creating dermatitis, dry skin, and eczema, which causes more loss of zinc.

2. Diarrhea

3. Vomiting

4. Increased urination in:
   a. Diabetes
   b. Burns
   c. Acute and chronic infections
   d. Surgery
   e. Cancer
   f. Heart attacks.
Diagnosing Zinc Deficiency

Testing for zinc is not routinely done in allopathic medicine but when you learn about all its functions, you’ll wonder why it isn’t. Immediately after that thought you will remember that allopathic medicine knows nothing and teaches nothing about nutrition and nutrients – to everyone’s detriment.

You may have zinc deficiency if you have to cover up white spots on your fingernails with bright nail polish!

Ninety percent of the body’s zinc is found in red and white blood cells so a red blood cell test will help diagnose deficiency.

On our RnA ReSet Website, you can order a Mg+Elements Test at the Research Link that will analyze Magnesium, Selenium, Zinc, Copper; Cadmium, Lead, Mercury) & Vitamin D. It’s a very convenient In Home test kit using a few drops of blood from a finger stick.

Ten percent of your total body zinc is found in serum. (By comparison, only one percent of magnesium is found in serum). Note that zinc is naturally elevated in hair, which indicates that hair analysis is not an accurate measure of zinc. (Yet another reason why I don’t find hair analyses consistent enough to be useful.)

When I was studying Naturopathic Medicine, we were told that our sense of taste can be used to diagnose zinc deficiency. I used this method in my practice for a time, but the results were inconsistent. The test required you to put two teaspoons of Zinc Tally (Metagenics) in your mouth to gauge your deficiency. If you tasted nothing or the solution tasted sweet, you were thought to be suffering from zinc deficiency. If you perceive a metallic taste, you were supposedly not deficient. However, even if you begin to taste Pico Zinc as metallic, the fact that zinc is not stored in the body means that it still should be taken daily.

I just looked up the Zinc Tally product online and a 4 oz bottle is $54.00
and 2 tsp equals 2 mg of zinc! If you want to try the taste test with *Pico Zinc*, you would only use 6 drops which would be equivalent to 2 mg of zinc. I would be interested in your findings.

In my *ReMyte & ReCalcia* book I say that the very low potency of zinc and the other minerals in *ReMyte* allows us to take small doses of these minerals in bioavailable form and let our body decide how much of each mineral it wants to use. However, with the current focus on the immune system, I’ve added *Pico Zinc* for stronger immune support.

**Sources of Zinc**

The highest amount of zinc is found in oysters, but the amount of zinc in oysters varies widely from 20mg – 80mg on different websites so it’s difficult to get an accurate number. Not many people eat oysters every day, but most people do eat meat, which is the second highest source.

- Oysters, 3 ounces (oz): 74 mg
- Beef patty, 3 oz: 5.3 mg
- Alaska king crab, 3 oz: 6.5 mg
- Fortified breakfast cereal, 3/4 cup serving: 3.8 mg
- Cooked lobster, 3 oz: 3.4 mg
- Cooked pork chop loin, 3 oz: 2.9 mg
- Baked beans, 1/2 cup serving: 2.9 mg
- Dark meat chicken, 3 oz: 2.4 mg

Other zinc sources in a person’s diet include turnips, peas, chickpeas, oatmeal, peanuts, almonds, whole wheat, pumpkin seeds, ginger root, and pecan nuts, low fat yogurt, and cheddar cheese. But these sources only contain around 1–2 mg of
zinc per serving. Since vegetarians don’t eat meat, they tend to have low levels of zinc in their diet and in their blood. Eating high levels of legumes and whole grains, which contain phytates that bind zinc and inhibit its absorption add to the risk of zinc deficiency. For that reason, vegetarians sometimes require as much as 50% more of the RDA for zinc (11mg) than non-vegetarians to allow for the phytate binding.

THE RELATIONSHIP OF COPPER AND ZINC

Any time you talk about zinc, copper has to come up in the conversation. Similarly, if you take zinc, you have to take copper. That’s why I have zinc and copper in ReMyte and there is an extra source of copper in Whole C ReSet. Two copper atoms reside inside the tyrosinase enzyme molecule, which is found in food-based vitamin C supplements.

Copper was recognized as an essential element in 1928, much earlier than most other minerals. Its uptake from the diet through the intestines is very low, only about 5 percent, and adults only have about 80-100mg stored in the body.

In my naturopathic training, I learned about copper as an antagonist of zinc; if you took too much zinc, you could lower your levels of copper. Then with the work of Carl Pfeiffer PhD, MD, who in 1987 wrote, “Excess Copper as a Factor in Human Diseases,” I learned that copper can be toxic but that you still need bioavailable copper for many functions in the body.

I hear from practitioners, who do hair tissue mineral analysis, that there is a noticeable level of copper toxicity in the population. The alarm has been sounded and many people are afraid of copper. The most common sources of copper toxicity are from water contaminated by copper plumbing, estrogen in birth control pills that drive down zinc and elevate copper, copper IUDs, and copper in multiple vitamin mineral supplements.
As I said, we walk a tightrope with copper because it is vital to the body in many ways, but its reported toxicity makes people afraid to take it. I’ve been aware of the problems presented by copper since the late 1970’s and I designed ReMyte to contain a low dose, bioavailable copper that cannot become toxic since it is balanced with the proper 10:1 ratio of zinc to copper.

Copper is important in red and white blood cell formation; it is found in most antibodies; it is necessary for creating the color and texture of your hair: it is responsible for the elasticity of your skin through the production of elastin, which cross-links with collagen in connective tissue. Adequate copper levels are essential for the growth of new blood vessels, wound healing, and recovering from heart attacks and strokes. Copper functions as a constituent of several antioxidant enzymes. Superoxide dismutase (SOD), monoamine oxidase (MAO), and cytochrome oxidase are the most important ones. Cytochrome oxidase is involved in the final step in the Krebs Cycle, occurring in mitochondria that creates ATP (adenosine triphosphate), the main energy source in our cells. ATP is also identified as Mg-ATP, which acknowledges magnesium’s role in making energy.

A copper-to-zinc imbalance, with too much copper and not enough zinc, can be a factor in postpartum-depression, premenstrual tension, ADHD, psychosis, and paranoia, since copper acts as a brain stimulant. Copper also plays a role in histamine imbalance. When copper is low, histamine can become elevated. Thus, when people are told they have high copper levels and try to bring them down, they can begin to experience histamine activation.

Histamine can also become elevated in magnesium deficiency. Enzymes that metabolize histamine require magnesium, copper and vitamin B6 to be able to function. The solution to histamine elevation is to take ReMag and ReMyte. As an ion, the copper in ReMyte is biologically active and assists the body in crucial metabolic functions that require copper.
Copper and Ceruloplasmin

You can’t talk about copper without mentioning an important protein called ceruloplasmin. I learned about this very complex substance in my naturopathic training. It’s responsible for iron absorption, oxygenating the body, and, along with magnesium, producing energy in the form of ATP.

Ceruloplasmin is the transport system that binds copper and ferries it through the blood. When ceruloplasmin levels are depleted, copper activity is low because it’s not moving into the cells. At the same time, the free copper that is not properly bound to ceruloplasmin can become toxic as it deposits in the wrong places. Remember, all this happens when there isn’t enough ceruloplasmin to go around.

If you have copper toxicity, the excess mineral can jam the copper receptor sites, causing simultaneous symptoms of copper excess and copper deficiency. However, you can’t just avoid copper because the body must have copper in a bioavailable form in order to function. The solution is to have enough ceruloplasmin to do its job.

The picometer-sized, stabilized ionic copper in ReMyte is fully absorbed at the cellular level and does not require special transport, so it is completely bioavailable. Also, bioactive copper ions will displace toxic copper compounds that jam up receptor sites, eliminating them and their negative effects.

Ceruloplasmin has many important functions besides ferrying copper around the body. It’s a lifesaver because it binds up free iron so that it can’t be used to feed infectious organisms that want to increase their territory in your body; and the excess iron cannot build up in the liver causing iron overload. In general, bioavailable copper is crucial to keep iron regulated.

My idea of supporting the structure and function of the body is to use the proper building blocks. The nutrients that are required to create ceruloplasmin are food-based vitamin C complex, vitamin A, and copper, all of which are available using our Completement Formulas. ReMyte will supply you with bioavailable.
copper; Whole C ReSet and ReStructure provide food-based vitamin C, which contains tyrosine with two copper atoms residing inside a molecule of the tyrosinase enzyme. We also carry Blue Ice Royal for its vitamin A, D, and K2 content.

Inhibiting Ceruloplasmin

I’ve told you what’s required to make ceruloplasmin but what’s standing in its way? Proper functioning of both the adrenals and liver are required to make ceruloplasmin. If the liver is overloaded with chemical, environmental, and drug toxins, ceruloplasmin becomes depleted and therefore there is not enough to keep iron and copper from depositing in soft tissues and causing damage.

Any stressors can deplete ceruloplasmin as well as the following:

- Too much Vitamin D can deplete both ceruloplasmin and magnesium. With the over-prescribing of vitamin D in recent years, ceruloplasmin and magnesium are both under attack.

- Ceruloplasmin requires vitamin A for production but vitamin D is required to support the function of vitamin A. I recommend Blue Ice Royal, which provides a good balance of vitamins, A, D, and K2 from food sources. Vitamin A, apparently is one of the nutrients that can still be found in foods – spinach, squash, tuna, sweet potato, chard, and cantaloupe are all good sources.

- Stress depletes ceruloplasmin. That’s why I recommend ReMag, oral liquid or ReMag Lotion to decrease these stress reactions that lead to chemical changes in the body.

- Iron supplements and iron-fortified foods can overload ceruloplasmin and deplete it.

- Calcium can deplete ceruloplasmin, possibly because it also depletes magnesium.
- Zinc and manganese are copper antagonists that can dump toxic copper out of storage sites into the bloodstream. According to researchers, on its way out of the body, copper excess can cause symptoms of skin rash, acne, and headaches. More extreme symptoms can include anxiety, OCD, joint or muscle pain, and mood swings.

- Bile is required to bind excess copper and remove it from the body. If the liver does not properly perform this function, copper may be retained and continue to cause copper toxicity symptoms.

**PICO ZINC DOSAGE**

I considered recommending taking ½ tsp (20mg) of *Pico Zinc* with a meal once daily for one week per month as a preventive measure. But zinc does not have an efficient storage system so, it’s best to take it daily. You are already doing that because there are 3mg of stabilized ions of zinc already in your *ReMyte* minerals per ¾ tsp dose.

However, during times of high viral activity with COVID-19, on top of the 6 mg of zinc in your 1.5 tsp of *ReMyte*, I recommend adding 5-10mg of *Pico Zinc* daily. I highly recommend that you take it with meals because it may cause some slight nausea if taken alone. Label instructions show that ½ tsp of *Pico Zinc* equals 20 mg, so for 5 mg you would take 1/8th tsp and for 10 mg you would take ¼ tsp. If you want to use a dropper – ½ tsp equals 60 drops, ¼ is 30 drops, 1/8th is 15 drops.

If you are exposed to a someone with a cold or flu, the protocol changes. Take ½ tsp twice a day for 2 weeks. If you still have symptoms, take ½ tsp per day for another 2 weeks, then go back to maintenance dose of 1/8th or ¼ tsp per day. Take With Food.

You will hear about much larger doses of zinc being used; 100-200mg
doses of zinc compounds are prescribed along with hydroxychloroquine, for example. But such large doses are only used for a short time in the case of COVID-19. Also zinc compounds in tablet form can be very poorly absorbed.

Fortunately, the stabilized ions of *Pico Zinc* are fully absorbed at the cellular level, so a much lower dosage is sufficient. *ReMyte* contains zinc and its antagonist copper in the correct proportions and in low enough amounts that neither will cause any toxicity. *The ReMyte* dosages don’t have to be high because both zinc and copper are bioavailable ions that are fully absorbed at the cellular level.

Be aware that high doses of zinc are not recommended due to the imbalance that is caused in other minerals. High doses of zinc can block the absorption of copper and manganese. However, when modest amounts of zinc and copper are bioavailable and absorbed at the cellular level, they play very well together, enhancing each other’s functions.

Zinc overdose is very rare, except if people are taking 50-100mg daily for extended periods. Overdose symptoms focus on the GI tract with nausea and vomiting.
CHAPTER SEVEN: FLORA REVIVE

*Flora ReVive* is the only soil-based probiotic formulated to specifically target yeast overgrowth using an antifungal component on a daily basis. *Saccharomyces boulardii* is the antifungal in *Flora ReVive*. As I’ve said for decades, yeast overgrowth is half the battle in dealing with *Total Body Meltdown*, the other half is magnesium deficiency, so I’m not shy about going after yeast every day.

The way I see it, once we’ve opened the door to yeast overgrowth there are going to be colonies just lying in wait for you to feed them with sugar, or alcohol, or carbs – or in my case, fruit! So, rather than spend my whole life avoiding the deliciousness of fruit, I’m going to eat it and take my *Flora ReVive* and win my lifelong battle with yeast. Take That You Fuzzy Critters!!

**Organisms on the Farm**

I support Oko'a Farms, an organic farm in Maui. The farmer, Ryan Earehart, talks about the importance of healthy soil bacteria for the plants. Ryan practices biodynamic farming where farmers introduce compost and organic compounds to the soil, in addition to rotating crops and letting certain fields lie fallow. Or he will grow a crop and plow it under to ensure nutrients are getting back into the soil. This approach is more sustainable, better for the environment, and better for Ryan’s customers.

Even though Ryan has very healthy soil, he was shocked to see the results of the *Radish Experiment* we did on his farm. You can read about it in Appendix A. You can also see the video comparing the two plots or radishes, one of which was fed with our living fertilizer *Mighty Mash*. Just click on the Radish Experiment above and go to minute 17.
WHY PROBIOTICS?

But let me back up a bit and ask the question — why do we require probiotics in the first place? Actually, we shouldn’t require probiotics. We have trillions of bacteria that inhabit our gut and what we need is to nurture and feed them. Prebiotics is the name
given to foods that feed our intestinal flora. They are simply insoluble fibers that have all but disappeared from our diet. In fact, the epidemic of IBS is partly due to the lack of this type of fiber in the diet. They serve as food for probiotics, which are tiny living microorganisms.

Our modern lifestyle with a fanaticism toward hygiene, a high sugar intake, alcohol, antibiotics, cortisone drugs, and the birth control pill (BCP) have created an imbalanced intestinal environment called dysbiosis. Antibiotics kill off both good and bad bacteria, leading to yeast overgrowth while cortisone, the BCP, and sugar feed the ravenous yeast.

How did our ancestors – my grandmothers, for example - get their probiotics? First of all, they weren’t fanatic about sterilizing their kitchens. They pulled vegetables from the garden and gave them a rinse and ate them. They tramped out in the fields, kicking up and breathing dust filled with organisms, and they had animals that shared their Microbiome.

They also got good bacteria from their diet by eating fermented foods – not consciously for the probiotics – but to preserve them before there was such a thing as refrigeration. But primarily they got their probiotics from dirt! Maybe that’s why gardeners, who play in the dirt, are so healthy.

Actually, the more I read about probiotics the more I learn that they all come from dirt! We have trillions of organisms in our intestines, perhaps we just have to feed them to bring them back to life and balance.

One of the Flora ReVive ingredients is Shilajit, which contains Fulvic and Humic acids that are no longer available to us to help maintain our gut flora. These substances occurred naturally in living soil until we medicated it with pesticides, which kill off soil organisms, treated it with herbicides, which kill off nutritious weeds, and over-farmed the land, which depletes the minerals. Plants are no longer allowed to decompose into the soil to replenish basic life-giving substances. Thus, our bodies are lacking the fulvic and humic acids they need for optimal health. You’ll
see below that fulvic and humic acids come from compacted plant material that we call humus.

So, what’s happening inside our bodies with our out-of-balance Microbiome is also happening to the soil. All in all, Louis Pasteur has a lot to answer for because he made everyone think that germs are out to get us, which put us at war with our intestinal microflora! His theory lined him up perfectly with allopathic medicine that just wants to hammer anything that moves.

And if all you have is a hammer, everything just looks like a nail. So, germs became the enemy and we had to make more and more antibiotics to kill germs, to the point that they decimated our intestinal microorganisms. For example, Clostridium difficile (C. diff) colitis is a common infection of the intestines that is typically associated with the use of antibiotics. Another common name for this condition is pseudomembranous colitis.

The alternative view is that of Antoine Béchamp, who theorized that an infection will occur in an environment that is already weakened and unable to fight off the germs. Commonsense tells us that Béchamp was correct because not everyone who is exposed to a virus comes down with an infection. We see that currently with COVID-19. Hundreds of thousands of people, who did not experience an infection, are testing positive for COVID antibodies. Their immune system countered the attack – as it is meant to do.

In short, Pasteur’s germ theory is one of killing germs instead of boosting your immune system. Having a strong immune system is the best way to defend ourselves from infection.

What about those that are waiting for a vaccine to prevent infection? I do not hold out any hope that Big Pharma will be any more successful against COVID-19 or its successors than they are with the seasonal flu. Read the conclusion of the 2018 Cochrane Report on flu vaccines.
We found 52 clinical trials of over 80,000 adults. We were unable to determine the impact of bias on about 70% of the included studies due to insufficient reporting of details. Around 15% of the included studies were well designed and conducted. We focused on reporting of results from 25 studies that looked at inactivated vaccines. Injected influenza vaccines probably have a small protective effect against influenza and ILI (moderate-certainty evidence), as 71 people would need to be vaccinated to avoid one influenza case, and 29 would need to be vaccinated to avoid one case of ILI. Vaccination may have little or no appreciable effect on hospitalization (low-certainty evidence) or number of working days lost.

In conclusion, healthy adults who receive inactivated injected influenza vaccine rather than no vaccine probably experience less influenza, from just over 2% to just under 1%.

I find it shocking that the public is not told this information but given the “promise” of a vaccine that will prevent COVID-19.

**FLORA REVIVE DOSAGE**

To protect the intestinal Microbiome from yeast overgrowth and to give probiotic and prebiotic support, I recommend taking 1 *Flora ReVive* twice per day. It can be taken with or without meals. As your yeast comes under control, you may take 1 *Flora ReVive* a day, but be prepared to increase it to 2 per day when you indulge in sweets or alcohol. We will offer a probiotic that does not contain the antifungal S. boulardii in the future.
CHAPTER EIGHT: DIET AND FIRST AID

IMMUNE SYSTEM DIET

I looked for books on diets for the immune system on Amazon and only found ones that on diets for inflammation and for autoimmune disease. These authors were waiting for the problem to get bad enough before they mount an attack. I’d rather identify the causes of a weakened immune system and eliminate them right out of the chute.

Dr. Gonzalez on my May 23, 2020 radio show was asked about diet and he said:

I think people should be on a preventive type of protocol. One of the important things is to try and not consume sugar and refined carbohydrates, because that will really compromise your immune system. The other thing is to eat a lot of vegetables and fruits, if possible. Also, it’s a good time to try Intermittent Fasting. Dr. Levy said diet was important but that you really have to add magnesium and vitamin C to your supplementation and also selenium and probiotics.

It’s the type of diet that we all know but you notice that Dr. Levy reinforced that fact that we can’t get away from taking supplements. There aren’t enough nutrients in our current food supply to prevent and treat serious viral attacks, however foods like sugar and refined carbohydrates are going to bring down your immunity.

I did mention how sugar can be an assault on your immune system in the Introduction and I think it’s important enough to repeat here. The following words about sugar are taken from a 2006 article by the late Dr. James Howenstine and represent the strongest inditement I’ve seen against sugar and its detrimental effect on the immune system.

“Ascorbic Acid Competes with Sugar in the Immune System”
Insulin moves both glucose and ascorbic acid into cells including phagocytic immune cells. The phagocytic cells like leukocytes attack and remove microbes, tumor cells and debris from the blood. The level of ascorbic acid in leukocytes may be 80 times greater than that found in plasma. Glucose and ascorbic acid are constantly competing for insulin transport so diets high in sugar and carbohydrates will decrease the amount of ascorbic acid that enters cells and thus create undesirable effects on the immune response.

**IMMUNE SYSTEM FIRST AID**

**Nebulizing Hydrogen peroxide**

During my March 30, 2020 radio show, Dr. Tom Levy gave us instructions on how to use Hydrogen Peroxide to prevent and treat viral infections. He said:

There is one other thing that’s extremely effective for viruses and probably the cheapest thing on the planet and that’s hydrogen peroxide. I have been advocating for some time now, especially if you don’t have access to anything else. It can stop things before, they start. Where are they testing for the coronavirus? In the nose. They go there because that’s where the virus multiplies. Hydrogen peroxide is arguably the most potent general anti-pathogen, viruses included, that you can have. It costs about 80 cents for a pint of it at any drug store.

When you get any sort of flu, virus, respiratory virus, or coronavirus, they all share this rapid and continual multiplication and replication in your sinuses, your nasal pharynx, your oral pharynx, your throat, your upper and lower respiratory tracts, which is why some cases progress so rapidly inside the lungs because for whatever reason, they are propagating more prolifically in the upper and lower respiratory tract. This replication feeds the viral load throughout the body. Now, if you can chop the head off a snake...
and knock out that virus replication, then most people, unless they are just a few minutes away from death, they can then, with their own immune system and with the help of vitamin C and these other things are talking about, they can mop up the virus in the rest of the body quite readily if you stop the new virus from coming in.

Nebulization is a fine mist that you can inhale created by a special machine called a nebulizer. You normally see it used for kids and adults with asthma. You nebulize 3% hydrogen peroxide. Most people need to dilute it a little bit with saline – 50:50, because it might sting a little bit. But, if you use it full strength – the 3% solution and it doesn’t burn or sting, it’s because your mucous membrane is already coated with pathogens, and it’s eating up the biofilm and then killing the pathogens.

You can inhale through the nebulizer several times a day if you have any type of respiratory symptoms. But only for 5-10 minutes at a time. Never put on the mask or even let a nebulizer spray mist through the night. You can do it once a day if you think you are in an area with high viral exposure. I do it every time I come off a plane. A plane has gotten me sick so many times. Well, I’ve never gotten sick since I started using this nebulization therapy. So, it’s very effective, very cheap, virtually and completely nontoxic.

You inhale the hydrogen peroxide into your oral and nasal pharynx making direct contact. It chews up the bacterial/viral/fungal biofilm which keeps pathogens from being accessed by an antibiotic. Antibiotics cannot penetrate a biofilm. So, it knocks out the biofilm, kills the pathogen, and then you stop supplying new viruses to the rest of the body, and you either never get the flu or coronavirus, or if you’ve already had it, you’re in a position to resolve it much more quickly.
My nebulizer has a medicine well that only holds 10 cc of fluid, which is 2 tsp, so I put in ½ tsp of hydrogen peroxide and ½ tsp of saline and run it for 5 minutes.

**Vaporizing ReMag**

*ReMag* liquid does not have any additives or preservatives, either. An older friend, who is also a customer, was coughing on the phone when I spoke with him in March 2020. He said he had bronchitis in the winter and still had a lingering cough. I told him to get a vaporizer and put *ReMag* in 10-12 ounces of distilled water in case he was dealing with magnesium-deficient bronchial tubes that were in spasm. When I spoke with him again in May, he told me he put a vaporizer on his desk and ran it while he was working. He put 2 tablespoons of *ReMag* in 12oz of water and just breathed in the misted air. Within 3-4 days the cough was completely gone. I told him that if there was ever another infection, he could vaporize *Pico Silver* in the same way.

If you have a medicinal nebulizer, you can mix ½ tsp *ReMag* and ½ tsp saline and inhale the vapor for 5-10 minutes. You can use it several times a day for acute or serious symptoms and once a day for mild symptoms.

**Vaporizing Pico Silver**

Using a cool-mist vaporizer, you can put 2 tablespoons of *Pico Silver* in 12oz of water and inhale the misted air.

If you have a medicinal nebulizer, you can mix ½ tsp *Pico Silver* and ½ tsp saline and using a mask or inhale the vapor directly for 5-10 minutes. You can use it several times a day for acute or serious symptoms and once a day for mild symptoms.
APPENDIX A

TOTAL BODY PROTOCOLS

There are now two Total Body Protocols: Total Body ReSet and Total Body Immunity.

1. Total Body ReSet contains:
   - ReMag, ReMyte, ReAline, ReStructure, RnA ReSet Drops
   - The Total Body ReSet Protocol can be paired with Total Body Immunity.

2. Total Body Immunity contains:
   - ReMag, D3-K2 ReSet, Whole C ReSet, Flora ReVive, Pico Silver, Pico Zinc

3. Additional recommendations include:
   - ReMag Lotion, ReCalcia, Pico Potassium, ReNew Serum, ReNew Face Cream, Blue Ice Royal, Mighty Mash

TOTAL BODY PROTOCOLS

The Total Body ReSet Protocol was devised to give hope to people suffering from what I term Total Body Meltdown. The protocol provides an effective starting point to put you on the path to wellness, but it can also keep you healthy and prevent any sort of “meltdown.”

I will begin with Total Body ReSet (TBR) giving detailed, step-by-step guidelines for implementing the protocol. Then I’ll outline the dosage instructions for Total Body Immunity (TBI). Below these two protocols are Additional Recommendations that may be helpful for certain individuals as outlined in the Product Descriptions.

My basic theory is that most chronic disease is a combination of mineral deficiencies (mostly magnesium) and yeast overgrowth, and my TBR Protocol supports the structure and function of the body to overcome these conditions.

Currently, in 2020, we have come face-to-face with a breakdown in humanity’s immunity and have become increasingly susceptible to viral assaults. As a result, I have implemented a Total Body Immunity protocol to address this assault using the following layers of protection: Pico Silver, Whole C ReSet, Pico Zinc, and D3-K2 ReSet.

I have written many in-depth books about various Completement Formulas and they are available for immediate download at DrCarolynDeanLive.

You can read more about these formulas in the (over) one-dozen free eBooks
TOTAL BODY RESET
Implementing the Protocol

1. Hydration Guidelines

Hydration is key to allowing your new minerals to work optimally in your cells. Our stabilized ionic minerals are fully absorbed into cells and they pull water in after them. This extra water is necessary for metabolic functions. Therefore, while waiting for your ReSet Formulas to arrive, begin hydrating your body by increasing your water intake and adding sea salt, Celtic salt, or Himalayan salt – choose a salt that retains the color of the minerals – not a pure white refined sea salt.

**Water Intake Guidelines:** Drink ½ your body weight (in pounds) in ounces of water. If you weigh 150 lbs, you will drink 75 ounces per day.

Sea salt or Himalayan salt: Add ¼ tsp to every quart of drinking water – to one of those bottles, you will later add ReMag and ReMyte. Note: You can also add Pico Silver, Pico Potassium to that same water, but Pico Zinc should be taken alone in water and with food.

2. ReAline®

When your bundle of products arrives, begin taking your ReAline capsules to assist in “taking out the trash” because as you begin changing your diet and taking ReMag and ReMyte, your body will begin to detox creating detoxification end products that have to be cleared.

**Dosage:** 1 per day with or without meals for 1 week, then take 1 capsule twice per day.

**Note:** If you are already taking ReMag, don’t worry, just continue to take it as you begin adding the other formulas.

**Product Description:** L-methionine and L-taurine are sulfur-based amino acids that lend their sulfur molecules to the liver’s sulfation detox pathways. The B vitamins in ReAline work synergistically with ReMag, methionine, and taurine. Four of the B vitamins are methylated and transfer methyl groups to the liver's methyl detox pathways. The rest of the B vitamins are food-based, which makes them easily absorbed and highly effective. They are essential to support our neurological health, the adrenal glands, sugar metabolism, and much more. Don’t be concerned that these are not high dose B vitamins. Most B vitamins are synthetic and have to be high dose to force their way into vitamin receptor sites. Methylated and food-
based B vitamins have no such issues. An in-depth discussion of ReAline and all its benefits can be found in my free eBook ReAline: Building Blocks to Detox.

3. ReStructure®

You can start to take ReStructure as soon as it arrives. It comes in a pouch that contains 22 servings. We also carry convenient individual packets for the gym, for traveling, or to determine if you love the product enough to purchase the pouch. Simply shake one scoop or one packet of ReStructure into 8 ounces of the liquid of your choice and drink to your health. I swallow my ReAline, Whole C ReSet, and Flora ReVive capsules, with my ReStructure drink.

**Product Description:** ReStructure is a highly digestible energy boosting protein powder for athletes. It’s also compatible with Paleo, Keto, and Yeast Free diets, as well as a meal replacement for losing weight and balancing blood sugar. Protein is the main ingredient, but carbs and fats are part of the formula for the appropriate macronutrient balance. Add raw eggs for more Paleo protein; blend in nuts or add heavy whipping cream to make it Keto. If you are looking to increase your vegetable intake, blend in one or two handfuls of greens such as spinach, chard, kale, arugula, etc. ReStructure contains a “secret ingredient”: the concentrated, dehydrated RnA ReSet Drops (AKA RnA Powder) that makes ReStructure the most unique meal replacement you will ever find. We think it’s the RnA Powder that makes customers feel they are getting much more protein than is disclosed on the label because it's so easily digested. Mix with water, coconut milk, or almond milk for a delicious, healthy beverage charged with the power of RnA Powder. More information can be found in my free eBook, ReStructure – A Formula to ReSet Your Body.

4. RnA ReSet Drops®

You can add RnA ReSet Drops at any time in your protocol; you may already be enjoying them.

**Dosage:** 1 drop under the tongue twice a day. Add 1-2 drops every week until you reach 15 drops twice a day, which is the average dose. Take RnA ReSet Drops 15 minutes away from food or drink.

**Product Description:** RnA ReSet Drops are the catalyst included in several of the Completement Formulas. They provide the impetus for RNA to make perfect copies of DNA for new cell development using the ionized minerals in ReMag and ReMyte as building blocks. Each batch of the Drops is tested through FDA-certified 3rd party labs, which provide our Certificates of Analyses that reveal the quality and consistency of our product. We ensure that each batch is free of organisms, allergens, and heavy metals and reflects the beneficial nutritional assets of biological sugars, amino acids, and stabilized ionic phosphorus.
The Radish Experiment below describes the power and potential of the *RnA ReSet Drops*.

**The Radish Experiment**

It’s been difficult to explain the *RnA ReSet Drops*, so difficult that I haven’t been able to write a book about them like I have for most of our other products. So, in order to satisfy our scientific curiosity, we funded the *Radish Experiment*. You can click on the link to see our *RnA ReSet Drops* Webinar that shows the video of our experiment using *Mighty Mash* the “waste” product of the *Drops*.

Let me explain the process of making the *RnA ReSet Drops* and how we obtain the *Mighty Mash*. Our *RnA ReSet Drops* are extracted from a few hundred pounds of barley seeds that are germinated in huge rotating drums for several days. There’s a lot more going on, but that’s the basic process. The leftover barley sprouts, after squeezing out the *Drops*, when dried look and feel like straw. We call this straw *Mighty Mash*, and we’ve been experimenting with as a living fertilizer.

*The Radish Experiment* consisted of digging the *Mighty Mash* into the soil and planting radish seeds. One plot used the *Mash* while the other had no additions. Both plots were watered daily. The *Mash* plot was also sprayed with *Mash* tea twice a week. The tea consists of *Mash* soaked in a drum of water.

On Day 25, both plots were harvested. We were shocked to find that the *Mash* plot produced 85 pounds of large, beautiful bright red radishes. The non-*Mash* plot only produced 3 pounds of radishes that passed inspection. The majority were wormy, small, and deformed!

Here’s what I realized from this amazing experiment. Insects, worms, bacteria, and weeds are only programmed to “attack” weak, dying, or dead life forms. It’s their prime directive – to take out the trash. Humans, animals, and plants are surrounded by similar invaders and only succumb when they are in a weakened state. *RnA ReSet Mash* infused the radishes with life and energy and made them incompatible with the organisms looking to cull out the weak plants.

I say the same happens with humans and is abundantly clear that is happening with our current viral pandemic. We weaken ourselves with a poor diet, bad lifestyle, drugs, and negative emotions and then we easily succumb to infections.

If we have the right building blocks from *ReMag*, *ReMyte*, and *ReAline*, and an infusion of life force from *RnA ReSet Drops*, we are no longer victims to predators. To me, it’s that simple, and that’s why I created the *Completement Formulas*.

5. *ReMag®*

Carolyn Dean MD ND  www.RnAReSet.com
You may already be taking *ReMag*, but if not, after 4 days of *ReAline* and *ReStructure*, add *ReMag*, starting with ¼ tsp per day in a quart of water and sipping it throughout the day. By doing this you allow a slow infusion of *ReMag* into the cells, not an overload that may not enter into the cells but could be lost in the urine or through the bowels. Every 2 days, add another ¼ tsp. Work up to a saturation dose of 2-4 tsp a day if you are trying to overcome a magnesium deficiency, if you are on medications, or if you are participating in athletic and/or work activities where you sweat out your minerals yet you need to keep working.

**Note:** If you are already taking *ReMag*, remind yourself of the dosage instructions and move on to #6 and begin adding *ReMyte*.

**Product Description:** Magnesium is required in 1,000 enzyme processes in the body and is responsible for 80% of known metabolic functions. *ReMag* is a unique, non-laxative, 60,000 ppm-concentrate of stabilized magnesium ions where 1 tsp equals 300mg of elemental magnesium. *ReMag* works synergistically with *ReMyte*. For more information, read my free eBook, *ReMag: Invisible Minerals Part I*. You can use *ReMag Lotion*, described below, to help boost your magnesium levels.

**6. ReMyte®**

After a week of slowly building up *ReMag*, add ¼ tsp of *ReMyte* into the same quart of water and sip it through the day. Every 2 days, add another ¼ tsp. Work up to 1½ tsp a day. However, if you are taking 4 tsp a day of *ReMag*, take 2 tsp a day of *ReMyte* to balance the minerals.

**Product Description:** Every enzyme reaction in the body requires a vitamin or a mineral as a participating cofactor. *ReMyte* is a multiple mineral made by the same process as *ReMag*, which stabilizes the minerals as ions. While all the minerals in *ReMyte* support hundreds of enzyme processes and are necessary for countless body processes, 9 of the 12 minerals specifically improve the structure and function of the thyroid and are required to make thyroid hormones. Instead of purchasing a dozen different bottles of minerals, you just need one bottle of *ReMyte*.

**Note:** When you take *ReMyte*, it can “wake up” your thyroid and improve your metabolism. However, be aware that if you are on thyroid medication, you may find yourself a bit hyperactive or a little bit warm because you no longer need as much thyroid medication as you are taking. Be sure to check with your doctor about reducing your medication. For more information, read my free eBook *ReMyte & ReCalcia: Invisible Minerals Part II*.

**TOTAL BODY IMMUNITY**

Carolyn Dean MD ND  www.RnAReset.com
The following abstract, from the journal *Nutrients*, defines the importance of nutrients in supporting the structure and function of the immune system against viruses as indicated by the title: “Optimal Nutritional Status for a Well-Functioning Immune System is an Important Factor to Protect against Viral Infections.” This article completely validates the use of all our *Completement Formulas* and *Total Body Immunity Formulas* to maintain your health.

Public health practices including handwashing and vaccinations help reduce the spread and impact of infections. Nevertheless, the global burden of infection is high, and additional measures are necessary. Acute respiratory tract infections, for example, were responsible for approximately 2.38 million deaths worldwide in 2016.

The role nutrition plays in supporting the immune system is well-established. A wealth of mechanistic and clinical data show that vitamins, including vitamins A, B₆, B₁₂, C, D, E, and folate; trace elements, including zinc, iron, selenium, magnesium, and copper; and the omega-3 fatty acids eicosapentaenoic acid and docosahexaenoic acid play important and complementary roles in supporting the immune system. Inadequate intake and status of these nutrients are widespread, leading to a decrease in resistance to infections and as a consequence an increase in disease burden. Against this background the following conclusions are made: (1) supplementation with the above micronutrients and omega-3 fatty acids is a safe, effective, and low-cost strategy to help support optimal immune function; (2) supplementation above the Recommended Dietary Allowance (RDA), but within recommended upper safety limits, for specific nutrients such as vitamins C and D is warranted; and (3) public health officials are encouraged to include nutritional strategies in their recommendations to improve public health.

**Note:** I do not endorse the use of vaccinations for viral influenza. A 2018 Cochrane Report concluded that in a series of 52 studies, there was only a 1-2% benefit from taking a flu vaccine. This is a scientific fact that is being ignored.

The above abstract says that we can be supplementing nutrients above the RDA and even up to the upper limits of safety for vitamins C and D. Note that all of the nutrients mentioned (except iron) are in our *Total Body ReSet Formulas* and *Total Body Immunity Formulas*.

Our Total Immunity Formulas include: *Pico Silver*, *Whole C ReSet*, and *D3-K2 ReSet*) and are taken along with our *Total Body ReSet Formulas ReMag, ReMyte, ReAline, ReStructure* and *RnA ReSet drops*.

My research and experience tell me that you shouldn’t need any other supplements. Practitioners try to promote many high dose antioxidants, but each of the products I’m recommending has antioxidant, anti-inflammatory, and anti-infective properties and they give you ample protection and support.
1. **ReMag**

I include *ReMag* in the *Total Body Immunity Protocol* because it controls 80% of known metabolic processes, which means it probably controls 80% of the immune system. The description of *ReMag* can be found above or in my *ReMag* book or in *The Magnesium Miracle*.

2. **D3-K2 ReSet™**

Vitamin D3 has emerged as an important addition to our anti-viral protocol to support the structure and function of the immune system.

**Dosage:** Take one capsule per day. If you are exposed to a possible viral infection, take 2 per day. If infected with a virus, take 3–4 per day, depending on your blood levels. See the information about GrassrootsHealth In Home Lab Testing on our website under Research Project.

**Product Description:** It may be a surprise that I’m manufacturing a vitamin D3 dietary supplement because for many years I’ve spoken out against high dose vitamin D because in order to metabolize this vitamin into the active form you need more magnesium. Too much vitamin D can deplete magnesium and cause magnesium deficiency symptoms.

However, I’ve been exposed to the vitamin D research at GrassrootsHealth and became involved when they declared they wanted to learn more about the role of magnesium in vitamin D metabolism, just as I wanted to learn more available vitamin D. The In Home blood testing kit from GrassrootsHealth tests for magnesium, vitamin D, omega-3 fatty acids, and TSH so that we can learn whether we are taking enough of these nutrients to support the structure and function of our body and support our immune system.

Magnesium is so important in vitamin D metabolism that saturation levels of magnesium may be more effective in producing active vitamin D than high dose vitamin D. In fact, magnesium is required in 8 crucial steps of vitamin D metabolism. We will be able to answer this question with the research we are undertaking with GrassrootsHealth. Mainstream research is catching on. An *American Journal of Clinical Nutrition* trial concluded: “Our findings suggest that optimal magnesium status may be important for optimizing 25(OH)D status.”

Based on their testing, the GrassrootsHealth Scientific Panel recommends a level of 40-60 ng/mL (100-150 nmol/L). I’ve been recommending 30-40ng/mL. However, the testing we are doing with GrassrootsHealth will determine if we need to recommend higher levels of vitamin D.
D3-K2 ReSet contains 5,000iu of vitamin D3, 100mcg of Vitamin K2, and 11mg of RnA Powder, the catalyst that powers many of our Completment Formulas.

The K2 component in D3-K2 ReSet is K2-MK7, which is the most active form of K2 that works to increase bone density, decrease fracture risk, increase heart health by reducing artery calcification. It actively directs calcium to the bones and teeth and along with magnesium keeps calcium out of soft tissues. It has a positive effect on testosterone and fertility in men and conversely decreases androgens that create polycystic ovarian syndrome (PCOS) in women. It helps in the production of insulin, suppresses genes that can promote cancer, and help exercise endurance by enhancing energy utilization.

All these functions remind me of what magnesium can do: supporting bone health, reversing calcification, enhancing hormone production, including insulin, and Krebs cycle energy production. It’s not that one or the other is the major factor in these functions but that magnesium, vitamin K2, and vitamin D all work together synergistically. In fact, I’d say that some of the activities of vitamins D and K2 may occur because of magnesium. I’ll go into these functions in more detail in a book I’m writing called Total Body Immunity.

3. Whole C ReSet™

This formula is an organic Vitamin C complex comprised of acerola, tart cherry, whole fruit complex, and RnA Powder. Each capsule provides 250mg of vitamin C and 1,346 mg of Vita-C Fruit Blend.

**Dosage:** Take 1 capsule twice daily with or without food. If exposed to viral infection, increase your dosage to 2 capsules 4 times per day.

**Product Description:** Vitamin C is still the most popular vitamin in the world. However, most vitamin C supplements consist of one ingredient, ascorbic acid, which is printed plainly on the supplement label. Whole C ReSet is an organic Vitamin C complex contains natural ascorbates, all of which occur in food, but only 8 of which have been identified. There is a synergistic effect of the multiple ascorbates working together with a number of inseparable phytochemicals and co-factors such as polyphenols, including, anthocyanins, proanthocyanins, ellagic acid, chlorogenic acid, resveratrol, quinic acid, rutin, bioflavonoids including vitamin P, Factor K, Factor J, Factor P, ascorbinogen, and certain structural proteins, and various enzymes like tyrosinase. Thus, a Vitamin C complex formula is much more inclusive than a simple ascorbic acid ingredient.

Vitamin C complex is essential to 8 enzyme processes in the body. It assists in the growth, maintenance, and repair of tissues, including skin, blood vessels, bones, and teeth. It is a powerful antioxidant necessary for wound healing and it helps eliminate bruising. High amounts of vitamin C complex are found in the
adrenal glands and in the eyes.

In the book *Sugar Crush* by Dr. Jacoby I learned how Vitamin C complex specifically helps stabilize blood vessels and consequently prevent heart disease. Dr. Jacoby says:

Dr. John Ely developed the glucose-ascorbate antagonism theory. This theory stated that glucose and vitamin C compete against one another for the insulin they need to migrate into your cells and do their jobs. In that competition, glucose trumps vitamin C. This means that the more glucose circulating in the blood, the less vitamin C will enter the cells. When vitamin C is missing, your body will not convert L’arginine (an amino acid) to nitric oxide (a blood vessel vasodilator). Instead, it will convert to peroxynitrite, causing excessive constriction of the endothelium (in blood vessels) and reduction in blood flow (leading to hypertension).

**Ascorbic Acid Antiviral Mechanisms:**

**Direct antiviral mechanisms**

1. Disruption of viral capsid by structurally interfering with the sugar part of its glycoprotein envelope.
2. Damage of the viral capsid due to ascorbic acid’s redox capacity when given in pharmacological doses.
3. Inhibition of viral replication when provided in pharmacological doses by creating a hostile environment for this activity to occur, in addition to inhibiting viral replication enzymes.

**Indirect physiological mechanisms**

1. Increases cellular Immunity (White blood cells, neutrophils, macrophages, lymphocytes, NK cells).
2. Increases humoral immunity (B cells, antibodies).
3. Increases antiviral proteins (Interferon).
4. Increases energy by providing necessary electrons and electron movement for mitochondrial ATP generation.
5. Limits the main source of fuel of pathogenic organisms, sugar, when provided in pharmacological doses.
6. Potent, quick antioxidant action when provided in proper doses to prevent the dangerous and severe pathological cascade of the cytokine storm.
7. Maintains structural integrity of cells by favoring collagen formation.
4. Flora ReVive™

This product is our soil-based probiotic/prebiotic formula and is an important part of our Yeast Detox Protocol.

**Dosage:** 1 capsule twice a day taken with or without food. The ingredients in Flora ReVive do not require refrigeration. If you have a sensitive gut, you may begin by taking one per day for one week before adding the second capsule.

**Product Description:** Each veggie cap of Flora ReVive contains:

1) Saccharomyces Boulardii – 5 billion CFU (colony forming units) per capsule. S. Boulardii is a type of yeast that helps keep Candida albicans and gut bacteria in balance. This is a hardy probiotic that survives stomach acid and does not require refrigeration.

2) Humic-Fulvic Acid (325mg), derived from high-carbon humus found in ancient compacted plant material that is broken down by soil bacteria. This rich plant material contains probiotics, prebiotics, phytochemicals, enzymes, and minerals, and is the basis for all soil-based probiotics. Humic-Fulvic acid is high in oxygen and antagonistic to Candida albicans and biofilms.

3) Inulin (100mg), a complex sugar from plant roots. This prebiotic stimulates the growth of beneficial bacteria, which helps improve digestion, immunity, and overall health.

I have written an eBook called Flora ReVive that will give you a tremendous amount of information about your intestinal microflora and how to bring it back into balance.

5. Pico Silver™

*Pico Silver* supports the structure and function of the immune system against any type of infectious organism – bacteria, virus, or fungus.

**Dosage:** Varies from 1 tsp a day for maintenance up to 6 tsp a day for an acute infection. *Pico Silver* can be taken directly off the spoon or in sea-salted water, or mixed in with juice, or a smoothie along with *ReMag* and *ReMyte*. It is the only pico mineral that is tasteless.

**Product Description:** I decided to have *Pico Silver* made with the same stabilized ion technology as *ReMag*, *ReMyte*, and *ReCalcia* so that all of our minerals would be compatible. I was thrilled that the first time I used it for an “airplane cold,”
tsp throughout the day knocked it out overnight.

The silver ions that make up *Pico Silver* attach to WBCs to seek and destroy bacteria, viruses, and fungi and augment the myriad of other functions of WBCs. *Pico Silver* ions can safely detoxify the debris from dying organisms, thus curtailing the Herxheimer reaction as they fight infection. *Pico Silver* stimulates stem cell production enhancing all cell tissue types in the body and participating in tissue regeneration including remarkable wound healing. *Pico Silver* does not build up in tissues and it does not kill off good bacteria; instead, it balances the intestinal microbiome.

Read my booklet *Pico Silver: Clearing up the Controversy* for a good overview and *The Silver Report* for a more in-depth report on the power of our silver ions.

### 6. Pico Zinc™

Zinc supports the structure and function of the immune system and has become more relevant in the current requirement for us to have a valid viral defense. We learned that clinically hydroxychloroquine acts as an ionophore that allows zinc to enter into the cells where it is an effective anti-viral. However, *Pico Zinc* is a stabilized ion of zinc which is its own ionophore and readily enters into cells without needing any help.

Zinc-containing enzymes are involved in many aspects of metabolism, many of them overlapping and intersecting with magnesium enzymes. Here are a few activities that relate to the immune system. For a more complete list, see my book *Total Body Immunity*.

1. Blood formation
2. Vitamin A metabolism
3. Wound healing (zinc travels to wound sites: burns, abscesses, injury, and surgery)
4. Free radical protection with superoxide dismutase with zinc as a cofactor
5. Sensory functions (vision, hearing, smell, and taste)
6. Immune defense (cellular and antibody immunity)

**Dosage:** I considered recommending taking 1/2 tsp (20mg) of *Pico Zinc* with a meal once daily for one week per month as a preventive measure. But zinc does not have an efficient storage system so, it’s best to take some daily. You are already doing that because there are 3mg of stabilized ions of zinc already in your *ReMyte* minerals per ¾ tsp dose.

However, during times of high viral activity with COVID-19, on top of the 6 mg of zinc in your 1.5 tsp of *ReMyte*, I recommend adding 5-10mg of *Pico Zinc*.
daily. I highly recommend that you take it with meals because it may cause some slight nausea if taken alone.

Label instructions show that ½ tsp of Pico Zinc equals 20 mg, so for 5 mg you would take 1/8th tsp and for 10 mg you would take ¼ tsp. If you want to use a dropper – ½ tsp equals 60 drops, ¼ is 30 drops, 1/8th is 15 drops.

If you are exposed to a viral infection, the protocol changes. Take ½ tsp twice a day for 2 weeks. If you still have symptoms, take ½ tsp per day for another 2 weeks, then go back to maintenance dose of 1/8th or ¼ tsp per day. Taken With Food.

**Product Description:**

Zinc, according to the NIH Office of Dietary Supplements, plays an important role in the structure and function of the immune system. It is cofactor for nearly 100 enzymes in the body. Zinc has a role in:

1. Protein synthesis
2. Wound healing
3. DNA synthesis
4. Cell division
5. Supporting normal growth and development during pregnancy, childhood, and adolescence
6. The sense of taste and smell.

Unlike many other minerals, daily intake of zinc is required to maintain these functions because the body has no specialized zinc storage system.

*Pico Zinc™* follows the tradition of our *ReMag®, ReMyte®, ReCalcia®,* and *Pico Silver™* as a stabilized picometer-ion of zinc. The source of *Pico Zinc™* is a pure zinc lactate.

I've known for decades of the importance of zinc but it recently came to public attention because of its interaction with hydroxychloroquine. This decades-old malaria drug acts as an ionophore, which opens up mineral channels in the cells allowing zinc entry into the cells to kill viruses! Because our stabilized zinc ions are smaller in diameter than the body’s cell mineral ion channels, *Pico Zinc* is readily absorbed and acts as its own ionophore and doesn’t require hydroxychloroquine or the 6 transporter proteins that normally facilitate the movement of zinc.

One of the cautions about zinc is that if it is taken long term (for several months) and in high doses (over 40mg per day) it can cause copper deficiency. My
ReMyte is low dose zinc and low dose copper to avoid even the most remote chance of having zinc lower copper levels.

**ADDITIONAL RECOMMENDATIONS**

The following products can be added to the Total Body ReSet or the Total Body Immunity Protocols according to individual requirements. They will all definitely help in supporting the structure and function of your body as it overcomes Total Body Meltdown.

1. **ReMag Lotion**

*ReMag Lotion* is a superior hydrator that smooths and softens the skin. The skin is hydrated from inside-out by drinking enough water with sea salt and *ReMag.* And from outside-in with *ReMag Lotion.* Together they support the structure and function of the skin – the biggest detox organ in the body.

Before I began using *ReMag Lotion* as a body cream, I had keratosis pilaris – that’s a very fancy name for a common, harmless skin condition that causes dry rough patches and tiny bumps, mostly on the upper arms. The ability of *ReMag Lotion* to clear this decades-old condition proved to me its value in healing the skin.

*ReMag Lotion* can also clear, lighten, and brighten the skin, reducing redness, acne spots and blocked pores as it improves the function of skin cells. Magnesium help balance hormones that can affect the skin, including lowering the stress hormone, cortisol.

Many people use *ReMag Lotion* either for themselves or for their children to improve their magnesium levels.

2. **ReCalcia®**

*ReCalcia* is our calcium formula that you may want to add to your program if you are not obtaining sufficient calcium in your diet. I recommend 600 mg daily. See the calcium food list in my eBook, *ReMyte & ReCalcia: Invisible Minerals Part II.*

**Dosage:** On the days you are not getting 600mg of calcium, you can take *ReCalcia* (1-2 tsp per day, the equivalent of 300-600mg per day). Also, pay attention to your intake of *ReMag.* Magnesium intake should be 1:1 with calcium. However, if you are very magnesium-deficient or if your body is trying to break down calcified soft tissues, you may require more magnesium and less calcium in the first several months of treatment. During this time your magnesium to calcium ratio may be 2:1 or even 3:1.

3. **Pico Potassium**

Carolyn Dean MD ND  
www.RnAReSet.com
*Pico Potassium* is a stabilized ionic form of potassium that is fully absorbed at the cellular level.

**Product Description:** I hesitated for years to make a stabilized picometer, ionic form of potassium because the FDA advises only 99mg per dose. With the RDA at 4,700, it made more sense to tell people to eat lots of potassium-rich foods. However, the recent diet fads of Paleo, Keto, and Carnivore mean a lot less vegetables and a lot less potassium. You can track your potassium intake with the [Cronometer App](#) and if you aren’t getting 4,700mg per day, then you can take *Pico Potassium* to make up the difference. But since *Pico Potassium* has superior absorption you likely only need half of the amount indicated. Consult my *Pico Potassium* booklet for more information about the drugs, like diuretics, that deplete potassium and how you can also follow your blood tests to determine your potassium requirements.

**Dosage:** One 99mg dose of *Pico Potassium* is in ¼ tsp.

Remember, potassium and magnesium go together so you must continue to saturate with ReMag so that potassium can be properly absorbed and utilized.

### 4. ReNew Serum

*ReNew Serum* provides you with leading-edge skin enrichment. A labor-intensive process creates a 25X concentration of our *RnA ReSet Drops* formula. *ReNew* is superior to any serum presently on the market because it contains the unique and newly created iCell. Like the *RnA ReSet Drops*, it directs RNA to make perfect DNA copies in perfect cells.

*ReNew* benefits from having all of the previous generations of Drops blended together. We are now in our 170th generation of *RnA ReSet Drops*, which means no other formula will ever duplicate its properties. By using *ReNew* transdermally you will absorb the benefits of the *RnA ReSet Drops* through the skin – especially if you have any concerns about taking *RnA ReSet Drops* orally.

### 5. ReNew Face Cream

*ReNew Face Cream* is a unique cosmetic formula that is a synergistic blend of our healing *ReNew Serum*, our hydrating *ReMag Lotion*, and our antioxidant *Whole C ReSet*. It’s a formula that I developed out of my personal desire to have a powerful face cream. I’ve been using *ReNew Serum* on my face for years but found it too heavy and flaky when it dries so I began mixing it with *ReMag Lotion*. When we developed *Whole C ReSet*, with its 8 Vitamin C Complex elements, I decided to include that as a potent antioxidant that goes far beyond the synthetic ascorbic acid that is in most high-end face creams.
Here are the ingredients of *ReNew* Face Cream:

a. *ReNew Serum* has the *RnA ReSet Drops* property of directing RNA to make flawless copies of DNA and create perfect cells. View our *RnA ReSet Drops* Webinar [Radish Experiment](#) for a glimpse at the life force that emanates from the iCells in the *Drops*.

b. *ReMag Lotion* is a superior hydrator that smooths and softens the skin. The skin is hydrated from inside-out as well as outside-in, therefore oral *ReMag* Liquid and transdermal *ReMag Lotion* doubly support the structure and function of the skin – the biggest detox organ in the body. *ReMag* Lotion can also clear, lighten, and brighten the skin, reducing redness, acne spots and blocked pores as it improves the function of skin cells. Magnesium help balance hormones that can affect the skin, including lowering the stress hormone, cortisol.

c. *Whole C ReSet*, in addition to its antioxidant functions, regulates the synthesis of the structural protein collagen, which repairs damaged skin. How do we damage our skin? Let me count the ways: sun, chemicals in cosmetics, chemicals in our air, food, and water, lack of proper sleep, exercise. Poor diet and lack of proper hydration that includes sea salt.

*ReNew Face Cream* can be used on a daily basis to revive, restore, and brighten your precious skin.

6. *Blue Ice Royal – Vitamin A, D3, K2*

We do not make this product because Green Pasture has done such a great job of creating a food-based supplement that provides you with Vitamins A, D3, K2, and fish oil. It’s food-based, made from fermented cod liver oil and butter oil. For additional Vitamin D, try to get 20-30 minutes of sun exposure per day. You can obtain *Blue Ice Royal* on our website, *RnA ReSet*.

**Dosage:** One capsule twice per day.

**Note:** We are learning from our GrassrootsHealth research project that myself and many of our customers are below the optimum levels of vitamin D. Therefore, I recommend taking *D3-K2 ReSet* along with *Blue Ice Royal*.

7. *Mighty Mash*

Might Mash (MM) is a soil amendment formula that supports the structure and function of soil bacteria and the life and vitality of the soil. MM will help to reclaim
the soil that has been depleted for a century. MM is composed of dried barley sprouts that are left over after we extract the RnA ReSet Drops. The Mash still contains the iCell and provides living nutrients to the soil. You can see the wonders of Mighty Mash by viewing our webinar called RnA ReSet Drops. At the 18-minute mark I describe the results of the Radish Experiment, which used MM to produce amazing results. You can also read the description of the Radish Experiment under the RnA ReSet Drops.

RESOURCES:

- For free eBooks visit DrCarolynDeanLive.
- My live, 2-hour, call-in radio show is Monday’s at 4pm Pacific Time on https://dreamvisions7radio.com/dr-carolyn-dean/
- You can listen to a live stream of my previously recorded shows on http://achieveradio.com/carolyn-dean-radio/ or search my radio show archives by subject at DrCarolynDeanLive.com.
- For RnA ReSet Customer Support: Call 1-888-577-3703 or Email support@rnareset.com.
The role of vitamin D in reducing risk of COVID-19: a brief survey of the literature

by William B. Grant, PhD

(OMNS June 9, 2020) The evidence that higher vitamin D status is causally linked to lower risk of COVID-19 incidence, severity, and death continues to increase. This brief report outlines what has been learned through early June 2020 and provides links to some of the key references.

It should be noted that acceptance of the role of vitamin D supplementation will probably not be achieved before reports are published that demonstrate randomized controlled trials of vitamin D supplementation significantly reduced COVID-19 incidence or death. Several RCTs and observational studies regarding vitamin D supplementation and COVID-19 incidence and outcomes are either in the planning stage or in progress. The obvious groups to study are those at highest risk: dark-skinned people living at high latitudes, people in nursing homes or health care facilities; prisoners; factory workers such as in meat-packing facilities in the U.S.; health care workers. A major problem is that the powers that be see vitamin D as a threat to income and profit, so use the Disinformation Playbook to suppress positive information on vitamin D. [1]

In a review published in early April, it was proposed that vitamin D supplementation could reduce the risk of COVID-19. Two mechanisms were identified: 1, reduced survival and replication of viruses through vitamin D-stimulated release of cathelicidin and defensins, and 2, reduced risk of the cytokine storm by reducing production of pro-inflammatory cytokines. [2]

Reference was also made to the finding that vitamin D supplementation reduces risk of acute respiratory tract infections as demonstrated by randomized controlled trials. [3] It was recommended that vitamin D supplementation be aimed at increasing serum 25-hydroxyvitamin D [25(OH)D] levels to 40-60 ng/mL (100-150 nmol/l), which would require daily doses up to 4000 to 5000 IU/d vitamin D3. Magnesium should also be supplemented, perhaps 400 mg/d, since the conversion of vitamin D to different metabolites requires the presence of magnesium. This recommendation was based on findings in observational studies such as one conducted by Grassrootshealth.net on influenza-like illness. [4]
More recently, it was suggested that for those who have not been supplementing with vitamin D that they start supplementing with a large bolus dose of vitamin D of several hundred thousand IU within one-to-two weeks. The rationale is that without the bolus the body would otherwise take several months to achieve the optimum level. [5] It was also suggested that while vitamin D supplementation could stop COVID-19 from developing at the beginning of symptoms, it probably would not be very useful after lung and organ damage occurs in the acute stage. Most recently, evidence was outlined to show that vitamin D deficiency could explain much of the reason for higher case and mortality rates for Black, Asian, and Minority Ethnic (BAME) residents in England. [6]

References


Annotated links to related publications and preprints

"Of the 212 cases of COVID-19, majority had ordinary clinical outcome. Mean serum 25(OH)D level was 23.8 ng/mL. Serum 25(OH)D level was lowest in critical cases, but highest in mild cases. Serum 25(OH)D levels were statistically significant among clinical outcomes." Alipio, MM. (2020) Vitamin D Supplementation Could Possibly Improve Clinical Outcomes of Patients Infected with Coronavirus-2019 (COVID-2019); April 9, 2020. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3571484

"A lot of COVID-19 infected patients develop acute respiratory distress syndrome (ARDS), which may lead to multiple organ damage. These symptoms are associated with a cytokine storm syndrome. The aim of this letter is to note the 5 crucial points that vitamin D could have protective and therapeutic effects against COVID-19. For that reason, COVID-19 infection-induced multiple organ damage might be prevented by vitamin D." Aygun H. (2020) Vitamin D can prevent COVID-19 infection-induced multiple organ damage. Naunyn Schmiedebers Arch Pharmacol. 2020 May 25:14. https://pubmed.ncbi.nlm.nih.gov/32451597

"Timely implementation of vitamin D supplementation programmes worldwide is critical; initial priority should be given to those who are at the highest risk, including the elderly, immobile, homebound, BAME and healthcare professionals. Population-wide vitamin D sufficiency could prevent seasonal respiratory epidemics, decrease our dependence on pharmaceutical solutions, reduce hospitalisations, and thus greatly lower healthcare costs while significantly increasing quality of life." Davies G, Garami AR, Byers J. (2020) Evidence Supports a Causal Model for Vitamin D in COVID-19 Outcomes. 1 May, updated 3 June, 2020. https://www.medrxiv.org/content/10.1101/2020.05.01.20087965v2.full.pdf

"We retrospectively investigated the 25-hydroxyvitamin D (25(OH)D) concentrations in plasma obtained from a cohort of patients from Switzerland. In this cohort, significantly lower 25(OH)D levels (p = 0.004) were found in PCR-positive for SARS-CoV-2 (median value 11.1 ng/mL) patients compared with negative patients (24.6 ng/mL)." D'Avolio A, Avataneo V, Manca A, et al. (2020) 25-Hydroxyvitamin D Concentrations Are Lower in Patients with Positive PCR for SARS-CoV-2. Nutrients. 2020 May 9;12(5):E1359. https://pubmed.ncbi.nlm.nih.gov/32397511

"COVID-19 patients showed lower median 25(OH)D (18.6 ng/mL, IQR 12.6-25.3, versus 21.5 ng/mL, IQR 13.9-30.8; P=0.0016) and higher vitamin D deficiency rates (58.6% versus 45.2%, P=0.0005). Surprisingly, this difference was restricted to
male COVID-19 patients who had markedly higher deficiency rates than male controls (67.0% versus 49.2%, P=0.0006) that increased with advancing radiological stage and were not confounded vitamin D-impacted comorbidities."


"The RAS, which includes ACE and ACE2, is a complex network that has a major role in various biological functions 31. Chronic vitamin D deficiency may induce RAS activation lung fibrosis through activation of the RAS 35; therefore, increasing evidence indicates that 1,25(OH)2D3 may also be a negative endocrine regulator of the RAS. Inducing the expression of renin, ACE, Ang II and AT1R, and inhibiting ACE2 expression could result in acute lung injury. Vitamin D inhibits renin, ACE and Ang II expression, and induces ACE2 levels in ALI." Ghavideldarestani M, Honardoost M, Khamseh ME. (2020) Role of Vitamin D in Pathogenesis and Severity of COVID-19 Infection https://www.preprints.org/manuscript/202004.0355/v1

"We performed a retrospective study in two tertiary medical centers in South Asia. The medical records of COVID19 patients were reviewed and a total of 176 subjects included were the elderly whose age is at least 60 years, We reported that majority of the subjects had 25(OH)D level below 30 ng/mL, most of them were male, had diabetes, and were classified as severe. Most of the male and female subjects had 25(OH)D level below 30 ng/mL." Glicio, EJ.(2020) Vitamin D Level of Mild and Severe Elderly Cases of COVID-19: A Preliminary Report (May 5, 2020). SSRN: https://ssrn.com/abstract=3593258

Several recent publications and preprints report multi-country studies based of COVID-19 case or death rates with respect to country mean 25(OH)D concentration. One concern regarding such studies is that the 25(OH)D concentrations used are probably not related to those most likely to develop COVID-19 at the time of incidence. However, a more serious problem is that life expectancy has a much stronger correlation (direct) than does 25(OH)D as discussed in this preprint. I have confirmed their findings using more recent COVID-19 case and death rate data. Kumar V, Srivastaa A. (2020) Spurious Correlation? A review of the relationship between Vitamin D and Covid-19 infection and mortality. https://www.medrxiv.org/content/10.1101/2020.05.25.20110338v1.full.pdf

This article presents retrospective results for 780 patients in Indonesia. Compared to 25(OH)D >30 ng/mL, 25(OH)D between 20 and 30 ng/mL had an odds ratio for death of 7.6 (P<0.001), while 25(OH)D <20 ng/mL had an odds ratio for death of 10.1 (P<0.001).

Raharusun, P, Priambada S, Budiart C, Agung E, Budi C. (2020) Patterns of COVID-

JoAnn E. Manson, MD, DrPH, (2020) Does Vitamin D Protect Against COVID-19? MEDSCAPE, May 11, 2020

The recommended dietary allowance of vitamin D is 600-800 IU/daily, but during this period, a multivitamin or supplement containing 1000-2000 IU/daily of vitamin D would be reasonable. https://www.medscape.com/viewarticle/930152

Other resources on vitamin D and COVID-19
https://www.grassrootshealth.net/
https://vitamindwiki.com/
APPENDIX C:
Vitamin C Antiviral References

The following is the list of 25 scientific references from Dr. Michael Gonzalez that accompany his list of vitamin C antiviral attributes.

5. Yejin Kim, Hyemin Kim, Seyeon Bae, Jiwon Choi, Sun Young Lim, Naeun Lee, Joo Myung Kong, Young-il Hwang, Jae Seung Kang, Wang Jae Lee. Vitamin C Is an Essential Factor on the Anti-viral Immune Responses through the Production of Interferon-α/β at the Initial Stage of Influenza A Virus (H3N2) Infection. Immune Netw. 2013 Apr; 13(2): 70–74.
25. Schwager J; Bompard A; Weber P; Raederstorff D. Ascorbic acid modulates cell migration in differentiated HL-60 cells and peripheral blood leukocytes. Mol Nutr Food Res. 2015 Aug;59(8):1513-23.

APPENDIX D

Vitamin C Bibliography: Andrew Saul and Susmita Ganguly

4. "Vitamin C Function in AIDS", Medical Tribune, July 13, 1983. Link to article
7. "Vitamin C, the nontoxic, nonrate-limited antioxidant free radical scavenger." Medical Hypothesis 18:61-77. 1985. Link to article
APPENDIX E

MORE THAN YOU EVER WANTED TO KNOW ABOUT COFFEE ENEMAS

I have talked about coffee enemas but I’ve never written down a proper procedure. I’ll embellish some excellent material from Dr. Sherry Rogers 1994 book *Wellness Against All Odds*, which I found on a website selling “the best coffee for coffee enemas.” My comments are offset with my initials: CD.

The very last part of the colon, before reaching the rectum, is in an “S” shape and called the sigmoid colon. By the time stool gets to this part of the colon, most nutrients have been absorbed back into the bloodstream. Because the stool contains products of putrefaction at this point, there exists a special circulatory system between the sigmoid colon and the liver. There is a direct communication of veins called the enterohepatic circulation. Have you ever felt sick just before having a bowel movement, when stool material has just moved into the rectum for elimination? As soon as the material is evacuated, you no longer feel sick. This is due to the toxic quality of the material and the enterohepatic circulation coming into play. Because of this, it is important to evacuate when you have the urge. The rectum should usually be empty.

This circulatory system enables toxin to be sent directly to the liver for detoxification, rather than circulating them through the rest of the body and all of its vital organs including the brain. This system of veins carries rectal / sigmoid toxins directly to the liver for detoxification.

When a coffee enema is used, the caffeine from the coffee is preferentially absorbed into this system and goes directly to the liver where it becomes a very strong detoxicant. It causes the liver to produce more bile (which contains processed toxins) and moves bile out toward the small intestine for elimination. This seems to free up the liver to process more incoming toxic materials that have accumulated in the organs, tissues and bloodstream. The coffee does not go into the systemic circulation, unless the enema procedure is done improperly.

The coffee contains some alkaloids that also stimulate the production of glutathione-S-transferase, an enzyme used by the liver to make the detox pathways run. It is pivotal in the formation of more glutathione, one of the main conjugation chemicals, enabling toxins to be eliminated via bile into the small intestine. In other words, a coffee enema speeds up the detoxification process and minimizes the backlog of yet to be detoxified substances. You will need the following materials:

- An enema bag or bucket, preferably one of clear plastic that you can see through

CD: I buy my Disposable Enema Kits from Amazon. Being of Scottish descent, I reuse the bags and keep them clean by putting 2 ounces of 3% hydrogen peroxide in the
bag and through the tubing between uses.

- A stainless-steel cooking pot to boil the coffee.
- Organic coffee fully caffeinated, drip grind coffee.

CD: I buy my organic coffee from VitaCost.com. I make sure to grind it in my Blendtec high-speed blender before using it. If not, the larger grains WILL clog the tubing.

- A source of uncontaminated water. Chlorinated water should be boiled for 10 minutes
- The see-through enema bag/bucket is preferable, but an old-fashioned type that doubles as a hot water bottle can be used although it is hard to tell how much is used at each pass. Do not use any bag with a strong odor.

CD: Keep a few ounces of 3% hydrogen peroxide in the enema bag between uses to keep it perfectly clean and safe.

**Enema Procedure**

1. Put a little over 1 quart of clean water in a pan and bring it to a boil. Add 2 flat tablespoons of coffee (or the coffee amount that has been prescribed for you; the Gerson Program recommends 3 rounded Tbsp.). Let it continue to boil for five minutes, then turn the stove off, leaving the pan on the hot burner.

CD: I learned my coffee enema technique when I was invited to be a member of the Gerson Institute Board and given the gift of a week’s detox. I use 3 level Tbsp. of coffee. However, if you are new to coffee enemas, begin with only one teaspoon. The caffeine is not supposed to get into your bloodstream, but some people can feel a bit jittery after a coffee enema, so you need to allow your body to get used to a bit of caffeine in your system.

2. Allow it to cool down to a very comfortable, tepid temperature. Test with your finger. It should be the same temperature as a baby’s bottle. It’s safer to have it too cold than too warm; never use it hot or steaming; body temperature is good.

CD: Because I have no patience, I drop a half dozen ice cubes into the hot water to bring it to the right temperature. OR, an even more efficient way of preparing your coffee is to put the 3 Tbsp. of coffee in a mason jar with 24 ounces of water, shake it up, and let it sit overnight on the kitchen counter. In the morning, I shake it up again and let it sit for a few minutes and then pour the liquid into another mason jar and rinse the dregs out of the first jar. I also make a probiotic implant to use after my coffee enema. In a small jar, I open up one or two capsules of Flora Revive and then add 2 ounces of filtered water.
3. Instructions on setting up the bathroom.

CD: Sherry’s instructions are a bit convoluted. Let me just tell you what I do. I make my bathroom as comfortable as possible for my coffee enema experience, which I actually find quite enjoyable! I fold up a huge beach towel and put it on the floor. On top of that, I put a large Ziploc plastic bag and on top of that two double sheets of paper toweling to catch any and every drip that may occur! I use a bolster pillow for my head that is nice and solid so I don’t have to chase a floppy pillow around the room. Since I’m not going to have anything on below the waist, I wear socks and a sweater and have another large beach towel ready to cover me up when I’m lying down on the towel. To my right I have my roll of paper towels and four pieces ripped off and ready. To my left I have my Kindle to read while I’m waiting.

4. Pour the coffee into the enema bag. Loosen the clamp to allow the coffee to run out to the end of the catheter tip and re-clamp the bag when all the air has been removed from the enema tubing.

CD: I just run the coffee to the clamp because if you let it run to the end, the section after the clamp will drip all over the place.

5. Use a coat hanger to hang the enema bag at least two feet above the floor; on a doorknob or towel rack. Do not hang it high, like on the shower bar, because the tubing won't be long enough and even if it does the flow will be too forceful from such a height. It should flow very gently into the rectum and distal sigmoid colon only. It is not a high enema or colonic. Allowing it to go well up into the colon may introduce caffeine into the general circulation as though you had taken it by mouth.

CD: I found some great shower hooks to hang my coffee enema bag. It is large enough to fit over a door handle or towel rack. It is stronger than a coat hanger and you can take it traveling with you.

Important Note: To make sure coffee doesn’t get past your colon into your small intestine, you should hold your ileocecal valve closed while doing your enema. The valve is located about halfway between your belly button and your right hip bone. While introducing the coffee into your colon, hold the valve shut by placing the fingers of your right hand over the valve and pushing in, pulling up toward the left shoulder. You are exerting a deep pressure, not a superficial push.

6. Lie down on the floor on your back or right side and gently insert the catheter.

If you need lubrication, food grade vegetable oil such as olive oil, a vitamin E capsule, or KY jelly should be fine, unless you are chemically sensitive. It is generally a good idea to avoid petroleum products.

CD: I just stay on my back during my enema. I use George’s Aloe Gel from VitaCost.com as my lubricant. Before lying down, I put a generous amount of aloe on
the last several inches of the enema tubing and in and around my anus.

7. Gently insert the tube into the rectum a few inches and then release the clamp and let the first 1/2 of the quart (2 cups maximum) of coffee flow in. Clamp the tubing off as soon as there is the slightest amount of discomfort or fullness. Do not change positions or use an incline board to cause the enema to enter further into the colon; this defeats the purpose of this type of enema.

8. Try to retain the enema for a minimum of 12 or more minutes. Sometimes there will be an immediate urgency to get rid of it and that is fine. It helps to clean the stool out of the colon so that next time around you can hold more of the enema longer. Never force yourself to retain it if you feel that you can’t. When you have clamped the tubing, remove the catheter tip and void when you have to. It is best to hold it for at least 12 minutes each time. After you have emptied the bowel, proceed with the remaining 1/2 quart and likewise hold that for at least 12 minutes, if able, then void.

CD: If you are going to do the 2-cup treatment, I would just put 2 cups in the enema bag to start with. That way you don’t have to clamp the tubing closed and the intestinal peristalsis will just push gas or bowel contents and coffee back into the enema bag and cause you much less discomfort.

9. The goal is to have two enemas, not exceeding 1/2 a quart (2 cups) each, that you are able to hold for 12 to 15 minutes each. Usually 2 or 3 times will use up all of the enema, but that is not your goal. (The Gerson Program recommends one 4 cup enema) Being able to hold it for 12 to 15 minutes is. When you have finished your session, rinse out the bag and hang it up to dry. Periodically run boiling water, peroxide, or other comparable antimicrobial agent through the empty bag to discourage mold growth when not in use.

CD: I do the Gerson 4 cup enema and keep the tubing open to minimize distress. I hold it for 15 minutes and clap off the tubing and use paper towels to keep everything clean as I remove the tubing from my anus, drop the enema bag and tubing in the sink, and dive over to the toilet! When I’ve emptied my bowels fully, I then rinse out the enema bag and put in the two ounces of Flora Revive and repeat the enema procedure. But this time, when the probiotic implant is in place I clamp the tubing, remove it and lie on my towel for 5-10 minutes resting and allowing the implant to circulate through my colon.

If you feel wired or hyper, or have palpitations or irregular heartbeats after a coffee enema, you should reduce the amount of coffee, usually by half for a few days or weeks. Or consider that you really need organic coffee. Be sure the source of your water is good clean chemical-free spring, well, or filtered water.

CD: You also could just be magnesium deficient, so you can take care of that very easily by using ReMag.
Sometimes you will hear or feel a squirting out and emptying of the gallbladder. This occurs under the right rib cage, or sometimes more closely to the mid line. If after a week of daily enemas, you have never felt or heard the gall bladder release, you should consider making the coffee stronger, going up in 1/2 tablespoon increments per quart, not exceeding 2 tablespoons per cup. Alternately, you may need a slightly larger volume, such as 3 cups at a time. Sometimes, 3 enemas (2 cups or less each) rather than two at a session are more beneficial for some.

CD: I experience this bile dump more at the colon level. It sometimes comes after I think the colon has emptied after my enema and then I get a flush of very warm liquid, which I think could be bile. Always discontinue the enemas if there is any adverse reaction whatsoever, and discuss it with the doctor at your next appointment. If you find the enema helpful, do not use it more than once per day for any extended period without medical supervision. Use it as necessary, perhaps several days in a row, but more commonly a few times a week.

CD: I personally take one enema a week and an additional one on my fasting days. However, I will make a big confession. When I first began to experiment with coffee enemas I did them daily for several months. A friend of mine, the late Dr. Nick Gonzalez, recommended them to his cancer patients and did two a day himself. When I decided to cut back on them and maybe only do them once a week, I got caffeine withdrawal! But it took me weeks to realize this.

I never drink coffee, so I’ve never tried to go off it, and never developed a caffeine withdrawal headache. Well, that’s what happened when I stopped doing coffee enemas! I’d wake up in the morning and a few hours after my usual enema time, I’d develop a heavy head. So, I would just do a coffee enema and feel better thinking I was toxic – or some such nonsense! I kept telling myself stories about how I needed to keep taking the coffee enemas. Then it finally hit me that I was in caffeine withdrawal, so I just bit the bullet and cut way back on my coffee enemas!
APPENDIX F

MAGNESIUM IN VITAMIN D METABOLISM

“Magnesium, Vitamin D Status and Mortality” in BMC Medicine. Mg and metabolism of vitamin D, parathyroid hormone, ultraviolet B, and vitamin D binding protein.
Krebs Cycle Creates ATP Energy
REFERENCES

THE DOCTOR OF THE FUTURE

Dr. Carolyn Dean is a medical doctor and naturopath. She’s the author of over 35 books including best seller *The Magnesium Miracle* (2017) along with *IBS for Dummies, Hormone Balance, Death by Modern Medicine*, and over 110 Kindle books. In 2011, she launched RnA ReSet and brought her 50 years of experience into her proprietary, unique formulations that give every individual at any stage of wellness or illness the necessary building blocks for sustained health, vitality and well-being. Dr. Dean’s blog is at Dr.CarolynDean. Free eBooks and her radio show archives are at Dr.CarolynDeanLive.

**Disclosure**

Dr. Dean has a creative and economic interests in the innovative products of RnA ReSet, including, but not limited to: RnA ReSet Drops, ReMag, ReMyte, ReAline, ReCalcia, Pico Potassium, ReStructure, Pico Silver, Pico Zinc, Flora ReVive, Whole C ReSet, ReNew Serum, ReNew Face Cream, and our agricultural product, Mighty Mash. For more information regarding all the Completment Formulas, go to the product website RnA ReSet. If you have questions, email Customer Service at support@rnareset.com. If you wish to place an order by phone, call 1-888-577-3703.