

## Immune Defense & The "Long-Haulers"

As this viral pandemic continues, we all need to continuously modify our lifestyle and dietary risk factors as well as improve our immune defenses. As we know, for this particular virus, getting chronic inflammation and autoimmune conditions under control is crucial. Improved BMI (body mass index) or weight loss and increasing physical activity are important long-term goals and will help us to enhance ongoing health for future pandemic waves. Let's spend some time talking about the possible long-lasting inflammation from this virus and how it can lead to autoimmune disease and "long-hauler syndrome" (10-30% of COVID-19 survivors) or post-acute sequelae of SARS-COV-2 Infection or PASC according to the NIH. Most importantly, what can we do about it?

Of course, understanding that controlling co-morbidities or risk factors is crucial to the outcome of COVID-19 infection. These would include cardiovascular disease, diabetes type 2, obesity, chronic pulmonary disease, hypertension, metabolic syndrome, autoimmune conditions and chronic neurological disease. Age is another risk factor, but one that is well out of our control. What do all of these conditions have in common?

## INFLAMMATION

Let's talk about visceral fat versus subcutaneous fat. If we want to lose subcutaneous fat, we must increase our activity or exercise. Visceral fat or fat around our organs is more diet-related and is harder to put on or take off. Visceral fat cells are extremely active when it comes to producing inflammatory markers of inflammasomes. RNA viruses (among other things such as oxidized LDL, cholesterol crystals, uric acid crystals, bacteria, fungus and free radicals

or ROS) can activate these NLRP3 inflammasomes. This then starts the dangerous inflammatory cascade in the body which leads to chronic inflammation. This is an immune response of the body that, if not stopped, can lead a person through the 3 stages of COVID, and, ultimately death through involvement of the sympathetic nervous system. This is also what we are seeing with the "long haulers", those who have survived COVID but are experiencing persistent symptoms for months after recovery.

Dampening and then resolving the inflammatory response of the body is key to preventing damage and avoiding death. We can recommend things like quercetin, melatonin, curcumin, sulforaphane, EGCG and resveratrol, which can all act on the inflammasomes. However, my best recommendation these days is SPMS or specialized pro-resolving mediators, manufactured from high-quality marine oil. SPMS have been proven to break the Inflammasome activation chain reaction and promote inflammation resolution without suppressing our immune function. Not all SPMS are created equal, as some brands are actually 300 times more powerful than others.

Of course, changing our diets is the #1 thing we can do to decrease inflammation in the body. Avoiding processed foods, nicotine and environmental toxins is key. Trying to eat more organic produce, a more plant-based diet, better sleep, less stress, more exercise, more water, occasional dark chocolate and if we drink coffee, let's switch to organic. Since, we cannot control this COVID-19 virus, it's best for us to look for ways to control the host, our bodies. It's important for this virus but also for any potential future pandemics.

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