



How Nutrition May Help Preserve the Brain



After the COVID-19 pandemic, many are experiencing

“brain fog” after infection with COVID-19. Brain fog is not a medical or scientific term; it is used by individuals to describe how they feel when their

thinking is sluggish, fuzzy, and not sharp. We all experience this feeling from time to time. Perhaps you were not able to think clearly when you were sick with the flu or another illness. Traveling rapidly through multiple time zones disrupts your biorhythm and can cause this effect. Termed jet-lag, your thinking typically becomes sluggish. In each case you probably just waited to get back to normal, whether that meant recovering from your illness, adjusting to the new time zone, or waiting for medication side effects to wear off. But what if your thinking did not return to “normal”? Many people who have recovered from the acute, life-threatening effects of COVID-19, still do not feel that their thinking and memory are back to normal.

There are many ways that COVID-19 can damage the brain, including inflammation, lack of oxygen, and others. Inflammation is characteristic of all neurodegenerative conditions and paves the way for free radical activation. Studies have found that the activation of microglia occurs (tissue macrophages in the central nervous system) in response to injury, illness, aging, or other causes begins a cascade of events that can be characterized as an inflammatory process. This cascade is first mediated by the pro-inflammatory cytokine interleukin-1, which is overexpressed by the activated microglia. Through various pathways, interleukin-1 causes neuronal death, which activates more microglia and releases more interleukin-1. Over time, this ongoing inflammation in the brain destroys enough neurons to not just cause brain fog, but eventually develop the clinical signs of neurodegenerative diseases such as Alzheimer’s disease.

COVID-19 can also have long-term effects on other organ systems. People with long COVID, or “long-haulers” can experience lingering symptoms including fatigue, body aches, inability to exercise, headache, and difficulty sleeping. Some of these problems may be due to permanent damage to their lungs, heart, kidneys, or other organs. Damage to these organs — or even just the symptoms by themselves — can also impair thinking and memory and cause brain fog.

What might help clear the brain fog?

Perform aerobic exercise. (Always check/meet with your health care professional before engaging in a physical exercise program.)

You may need to start slow, perhaps just two to three minutes a few times a day. The intensity, exercise session duration, and frequency of exercise per week will depend upon your age, health history (previous injuries, blood pressure, myocardial

and circulatory system function status), current physical activity level, environmental and emotional stressors. While there is no established “dose” of exercise to improve brain health, it’s generally recommended you work toward 30 minutes a day, five days a week, if under age 40, and three to four sessions weekly over age 40.

Protecting the brain through nutrition

EPA+DHA: Epidemiological data indicate that *EPA* and *DHA*, especially *DHA*, are associated with a reduced risk of neurodegenerative diseases. Data from several animal models support the hypothesis that fish oil is important for the cognitive capacity because of anti-inflammation, anti-amyloid, antioxidant, and neuro-protectant mechanisms. In a 2016 study, cognitively healthy participants aged 50–75 took 2,200 mg per day of omega-3 fatty acids for 26 weeks. These individuals recalled object locations significantly better than their counterparts in the placebo group. The results of this study support the hypothesis that omega-3 fatty acid supplementation could help maintain memory function in healthy older adults.

Coenzyme Q10: Researchers believe that coenzyme Q10, a fat-soluble compound primarily synthesized in the body and also consumed in the diet, may have the potential to affect the course of neurological disease in which mitochondrial function is impaired and oxidative stress and damage are present. Coenzyme Q10 assist ATP fuel production in mitochondria. Low levels of Coenzyme Q10 results in brain fog, slow mental processing and cognitive decline. A study published in the *Journal of Clinical Psychopharmacology* found that in 18 people with depression, taking 400 800 mg/day CoQ10 for a month decreased the severity of depression symptoms and significantly improved symptoms of fatigue, sadness, and difficulty concentrating or brain fog.

Polyphenols: The most abundant antioxidants found in the diet, polyphenols have shown neuroprotective effects in studies over the past decade. Researchers have found that these plant compounds are able to protect neuronal cells through various mechanisms of actions. For example, green tea catechin polyphenols, not only are simple radical scavengers, but can also promote a spectrum of cellular reactions related to neuroprotective activity. These include activities such as activating survival genes and cell signaling pathways, and regulating mitochondrial function and possibly regulation of the ubiquitin-proteasome system.

Antioxidant Vitamins: Neural inflammation and oxidation damage are thought to be key mechanisms in the development neurodegeneration, so antioxidant vitamins become one of important strategies for neurodegenerative disease prevention. Studies found a reduced risk of Alzheimer’s disease in users of antioxidant vitamin supplements, supplementing of multivitamins and vitamins C and E was linked with a 78% reduced prevalence of Alzheimer’s disease. In addition, high serum levels of the antioxidant beta-carotene were associated with an 89% reduction in risk of cognitive decline.