



ABSTRACT

EPA, DHA, and coenzyme Q10 as nanonatraceuticals adjuvants In therapy against Covid-19

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Up today, August 28, 2021, about 215,5 million people have been infected with the coronavirus SARS-CoV-19 and with a global death of 4,5 million. US deaths 636,7K (fatality 0,194) and Spain 97,7K (fatality 0,208).

Many protocols have been implemented for the treatment of COVID-19 since the beginning of this pandemic throughout the world, but specific guidelines have never been made by the different international societies with respect to unifying criteria for action given the diversity of treatments that do not have had adequate clinical evidence. Since the vaccination campaign began, treatment has focused on hospitalized patients, but no prophylactic or early-onset treatment has been offered, limiting their access simply to infections with serious symptoms.

We have known as the adjunct therapy of vitamin C, Vitamin D, Quercetin, Vitamin B complex, Melatonin, Zinc and other phytochemicals, have had an important role both preventive and treatment in the onset of infection.

Nutraceutical derives from the combination of the words “nutrient” and “pharmaceutical.”

EPA and DHA from oil fish to pro-resolution hormones

EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) are long-chain omega-3 polyunsaturated fatty acids (O-3s) that are abundant in fish, shellfish, and some algae and genetically engineered plants. The body needs EPA & DHA omega-3s to develop and function optimally in every stage of life.

LOVAZA® was the first omega-3 approved by the FDA as a safe, natural, and effective medical-grade supplement for managing high triglycerides. Each 1-gram capsule of LOVAZA® contains 465 mg EPA and 375 mg DHA. EPA and DHA are the active fatty acids proven to lower very high triglycerides.

But the real secret to high doses of omega-3 fatty acids for cardiovascular patients is not the decrease in triglyceride levels, but the formation of the pro-resolution hormones (i.e., resolvins) that are critical in the resolution of inflammation.

The new coronavirus 2 associated to severe acute respiratory syndrome (SARS-CoV-2), surprisingly, does not affect only the lung. The severe response to SARS-CoV-2 appears to include a “cytokine storm”, which indicates a state of hyperinflammation and subsequent dysfunction of multiple organs and tissues in the most severe cases.

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This could be the reason why populations at highest risk of death from the SARS-CoV-2 infection-induced disease (COVID-19) are those suffering from chronic low-grade inflammation, but prone to hyperinflammation - advanced age, obesity, type 2 diabetes, hypertension and metabolic syndrome. Inflammation resolution is strongly dependent on lipid mediators, the specialized pro-resolution mediators (SPMs). Omega-3 polyunsaturated fatty acids are precursors of very potent SPMs, including resolvins (Resolvin D1 to Resolvin D6), protectins (protectin D1 –neuroprotectin D1), and maresins (MaR1 and MaR2).

In addition, they are associated with a less aggressive inflammatory initiation, after competing with omega-6 fatty acids for eicosanoid synthesis. Therefore, it makes sense to consider the use of Omega-3 for clinical management of COVID-19 patients

Omega-3 are currently undergoing clinical trials to determine its anti-inflammatory effects in patients with coronavirus disease 2019 (COVID-19).

Coenzyme Q10, beyond cosmetics

Coenzyme Q10 has been shown to be effective in preventing congestive heart failure. After a two-year study, a 43% reduction in heart attacks was observed in the group taking 100mg, three times a day. In addition, coenzyme Q10 helps alleviate the side effects caused by statins in some cases.

Coenzyme Q10 (CoQ10), naturally present in cells, helps mitochondria to produce the energy needed for all body functions. "It is essential in the transport of electrons".

The mitochondrial cofactors α -lipoic acid (ALA), coenzyme Q10 (CoQ10) and carnitine (CARN) play distinct and complementary roles in mitochondrial functioning, along with strong antioxidant actions.

Also termed mitochondrial nutrients (MNs), these cofactors have demonstrated specific protective actions in a number of chronic disorders, as assessed in a well-established body of literature.

The brain, heart and muscles are the organs that need the most energy and are especially vulnerable to a deficiency of Coenzyme Q10, the adequate supplementation of the same could benefit these patients.

Patients with severe lung involvement have a higher degree of endogenous oxidative damage. Additionally, a significant positive correlation was observed between CoQ10 with CRP and ferritin levels.

This presentation wants to demonstrate the added value of the nutraceutical's adjuvants in the therapy against COVID-19.

Keywords: EPA, DHA, coenzyme Q10, mitochondrial, nanonutraceuticals
