

COVID-19: Potential Effects of Nutritional Factors on Inflammation Relief

Authors : Maryam Nazari

Abstract : COVID-19 is a respiratory disease triggered by the novel coronavirus, SARS-CoV-2, that has reached pandemic status today. Acute inflammation and immune cells infiltration into lung injuries result in multi-organ failure. The presence of other non-communicable diseases (NCDs) with systemic inflammation derived from COVID-19 may exacerbate the patient's situation and increase the risk for adverse effects and mortality. This pandemic is a novel situation and the scientific community at this time is looking for vaccines or drugs to treat the pathology. One of the biggest challenges is focused on reducing inflammation without compromising the correct immune response of the patient. In this regard, addressing the nutritional factors should not be overlooked not only as a matter of avoiding the presence of NCDs with severe infections but also as an adjunctive way to modulate the inflammatory status of the patients. Despite the pivotal role of nutrition in modifying immune response, due to the novelty of the COVID-19 disease, information about the effects of specific dietary agents is limited in this area. From the macronutrients point of view, protein deficiency (quantity or quality) has negative effects on the number of functional immunoglobulins and gut-associated lymphoid tissue (GALT). High biological value proteins or some amino acids like arginine and glutamine are well known for their ability to augment the immune system. Among lipids, fish oil has the ability to inactivate enveloped viruses, suppress pro-inflammatory prostaglandin production and block platelet-activating factors and their receptors. In addition, protectin D1, which is an Omega-3 PUFAs derivation, is a novel antiviral drug. So it seems that these fatty acids can reduce the severity and/or improve recovery of patients with COVID-19. Carbohydrates with lower glycemic index and fibers are associated with lower levels of inflammatory cytokines (CRP, TNF- α , and IL-6). Short-Chain Fatty acids not only exert a direct anti-inflammatory effect but also provide appropriate gut microbial, which is important in gastrointestinal issues related to COVID-19. From the micronutrients point of view, Vitamins A, C, D, E, iron, magnesium, zinc, selenium and copper play a vital role in the maintenance of immune function. Inadequate status in these nutrients may result in decreased resistance against COVID-19 infection. There are specific bioactive compounds in the diet that interact with the ACE2 receptor, which is the gateway for SARS and SARS-CoV-2, and thus controls the viral infection. Regarding this, the potential benefits of probiotics, resveratrol (a polyphenol found in grape), oleylethanolamide (derived from oleic acid), and natural peroxisome proliferator-activated receptor γ agonists in foodstuffs (like curcumin, pomegranate, hot pepper) are suggested. Yet, it should be pointed out that most of these results have been reported in animal models and further human studies are needed to be verified.

Keywords : Covid-19, inflammation, nutrition, dietary agents

Conference Title : ICOSID 2021 : International Conference on Oxidative Stress, Inflammation and Diet

Conference Location : Los Angeles, United States

Conference Dates : October 28-29, 2021