



ROLE OF MITOCHONDRIA, OXIDATIVE STRESS AND THE RESPONSE TO ANTIOXIDANTS IN MYALGIC ENCEPHALOMYELITIS/CHRONIC FATIGUE SYNDROME: A POSSIBLE APPROACH TO SARS-COV-2 'LONG-HAULERS'?

Wood, E ; Hall, KH ; Tate, W
Chronic diseases and translational medicine. 2021;7(1):14-26

Cases of chronic fatigue have been reported following recovery from Covid-19, in what is termed 'Long Covid', with symptoms likened to that of sufferers from chronic fatigue syndrome (CFS) and myalgic encephalomyelitis (ME). How CFS/ME develop and treatments may help to further understand Covid-19. This review study of 111 studies aimed to identify where urgent research is required to help understand the potential of chronic fatigue therapies in Covid-19.

The study first reviewed disrupted cellular energy production in ME/CFS and increased presence of damaging oxidants. Current therapies for improving cellular energy production in CFS/ME were then reviewed and Ritalin, ubiquinone and mitoquinol mesylate were heavily featured. Antioxidant therapies in CFS/ME were reviewed and observations would suggest that trials in patients with long covid are needed.

It was concluded that research in cellular energy production in CFS/ME has been increasing, however remains contradictory due to a lack of a definitive diagnosis, differing disease severity and the huge differences between patients who suffer from CFS/ME. Further research is required in ME/CFS and Covid-19. This study could be used by health care professionals to understand the importance of monitoring symptoms of fatigue post Covid-19 infection and the possible use of ME/CFS treatments.

THE LONG HAUL OF COVID-19 RECOVERY: IMMUNE REJUVENATION VERSUS IMMUNE SUPPORT.

Bland, JS
Integrative medicine (Encinitas, Calif.). 2020;19(6):18-22

Following Covid-19 infection, sufferers have reported various residual symptoms, which have been likened to those experienced by chronic fatigue sufferers and those with Gulf War syndrome. This review paper aimed to assess whether the body has a similar immune response to these diseases during Covid-19, and if so, what therapies could be used. It also reviewed any diet and lifestyle factors that may be affecting the immune response. The paper stated that Covid-19 infection is associated with inflammation, which can damage immune cells and inflammation prior to Covid-19 infection may contribute to severity of the infection. Prior research in seemingly healthy individuals indicates that environment, diet, and lifestyle factors can all contribute to differing "immune identities" and eliminating immune cells which carry the imprint of memories should be a therapy focus in Covid-19 patients. Fasting, diets low in refined sugars and high in omega-3 and plant chemicals were discussed as ways for the body to clear out immune cells. It was concluded that personalising therapy strategies based on an individual's immune identity to reduce inflammation could ultimately support the immune system. This paper could be used by healthcare professionals to understand the importance of diet and lifestyle changes to reduce inflammation and support the immune system.



THE IMPACT OF NUTRITION ON COVID-19 SUSCEPTIBILITY AND LONG-TERM CONSEQUENCES.

Butler, MJ ; Barrientos, RM
Brain, behavior, and immunity. 2020

The impacts of Covid-19 are being felt across the world, affecting health, healthcare and economies. Statistics from across the world are showing that the elderly, those with underlying medical conditions and under-represented minority groups are particularly vulnerable to severe complications and have a higher risk of dying of Covid-19.

This opinion piece presents arguments for the importance of focusing on diet to support health resilience in general and the immune system in particular, to minimise the impact of this and future viruses. Research is presented on excessive intake of saturated fat leading to chronic activation of the innate immune system (first line, rapid defence against infection), resulting in inflammation, and associated heightened susceptibility to complications of viral infection.

The standard western diet (high saturated fat, refined carbohydrates and sugars, low levels of fibre, unsaturated fat and antioxidants) has also been shown to affect the adaptive immune system (second line, delayed defence against infection) depressing its action against infection.

The piece also discusses possible long-term, future impacts of those recovered from Covid-19 infection, particularly in relation to neurodegenerative diseases such as Alzheimer's. The authors call for fresh, healthy wholefoods to be readily available and affordable to everyone in society.

MORE THAN 50 LONG-TERM EFFECTS OF COVID-19: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Lopez-Leon, S ; Wegman-Ostrosky, T ; Perelman, C ; Sepulveda, R ; Rebolledo, P ; Cuapio, A ; Villapol, S
Research square. 2021

Symptoms, signs, or abnormal clinical parameters persisting two or more weeks after COVID-19 onset that do not return to a healthy baseline can potentially be considered long-term effects of the disease.

The aim of this study was to estimate the incidence of all the symptoms, signs, or abnormal laboratory parameters extending beyond the acute phase of COVID-19 reported to date. This study is a systematic review and meta-analysis of 15 peer-reviewed studies that reported symptoms, signs, or laboratory parameters of patients at a post-COVID-19 stage (assessed two weeks or more after initial symptoms) in cohorts of COVID-19 patients. Results indicate that 80% (95% CI 65–92) of individuals with a confirmed COVID-19 diagnosis continued to have at least one overall effect beyond two weeks following acute infection.

In total, 55 effects, including symptoms, signs, and laboratory parameters, were identified, with fatigue, anosmia [partial or complete loss of the sense of smell], lung dysfunction, abnormal chest X-ray/CT scan, and neurological disorders being the most common.

Authors conclude that physicians should be aware of the symptoms, signs, and biomarkers present in patients previously affected by COVID-19 to promptly assess, identify and halt long COVID-19 progression, minimize the risk of chronic effects and help re-establish pre-COVID-19 health.

