

# Is mitochondrial bioenergetics and coenzyme Q10 the target of a virus causing COVID-19?

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PMID: 33164536 DOI: [10.4149/BLL\\_2020\\_126](#)

## Abstract

COVID-19 – a coronavirus disease, affected almost all countries in the world. It is a new virus disease, nobody has prior immunity to it, human population is prone to infections. In March 11 2020, WHO declared the pandemic status. The main symptoms include: fever, dry cough and fatigue. Virus proteins need mitochondrial energy for their own survival and replication. Upon viral infections, mitochondrial dynamics and metabolism can be modulated, which can influence the energy production in the host cells. Coenzyme Q10 is an integral component of mitochondrial respiratory chain and the key component of mitochondrial ATP production. The exact pathobiochemical mechanism of the disease is unknown. Modulated mitochondrial dynamics and metabolism with lower CoQ10 levels in viral infections leads us to the hypothesis that one of the main pathobiochemical effects of SARS-Cov-2 virus could be mitochondrial bioenergetics dysfunction with CoQ10 deficit leading to the reduction of its endogenous biosynthesis. The mechanism might be virus induced oxidative stress causing a mutation of one or more of the nine COQ genes, resulting in primary CoQ10 deficiency. New perspective for patients with COVID-19 may be supportive targeting therapy with coenzyme Q10 to increase the energy production, immunity and decrease oxidative stress (Fig. 1, Ref. 51). Keywords: COVID-19, virus, mitochondrial bioenergetics, coenzyme Q10, oxidative stress.

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