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**Coenzyme Q10 deficiency in myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) is related to fatigue, autonomic and neurocognitive symptoms and is another risk factor explaining the early mortality in ME/CFS due to cardiovascular disorder.**Maes M<sup>1</sup>, Mihaylova I, Kubera M, Uytterhoeven M, Vrydags N, Bosmans E.

## + Author information

**Abstract**

**INTRODUCTION:** Myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) is a medical illness characterized by disorders in inflammatory and oxidative and nitrosative (IO&NS) pathways.

**METHODS:** This paper examines the role of Coenzyme Q10 (CoQ10), a mitochondrial nutrient which acts as an essential cofactor for the production of ATP in mitochondria and which displays significant antioxidant activities. Plasma CoQ10 has been assayed in 58 patients with ME/CFS and in 22 normal controls; the relationships between CoQ10 and the severity of ME/CFS as measured by means of the FibroFatigue (FF) scale were measured.

**RESULTS:** Plasma CoQ10 was significantly ( $p=0.00001$ ) lower in ME/CFS patients than in normal controls. Up to 44.8% of patients with ME/CFS had values beneath the lowest plasma CoQ10 value detected in the normal controls, i.e. 490 microg/L. In ME/CFS, there were significant and inverse relationships between CoQ10 and the total score on the FF scale, fatigue and autonomic symptoms. Patients with very low CoQ10 (<390 microg/L) suffered significantly more from concentration and memory disturbances.

**DISCUSSION:** The results show that lowered levels of CoQ10 play a role in the pathophysiology of ME/CFS and that symptoms, such as fatigue, and autonomic and neurocognitive symptoms may be caused by CoQ10 depletion. Our results suggest that patients with ME/CFS would benefit from CoQ10 supplementation in order to normalize the low CoQ10 syndrome and the IO&NS disorders. The findings that lower CoQ10 is an independent predictor of chronic heart failure (CHF) and mortality due to CHF may explain previous reports that the mean age of ME/CFS patients dying from CHF is 25 years younger than the age of those dying from CHF in the general population. Since statins significantly decrease plasma CoQ10, ME/CFS should be regarded as a relative contraindication for treatment with statins without CoQ10 supplementation.

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