Abstract

Antioxid Redox Signal. 2014 Feb 24. [Epub ahead of print]

Does High-Dose Coenzyme Q10 Improve Oxidative Damage and Clinical Outcomes in Parkinson's Disease?

Seet RC, Lim EC, Quek AM, Chow AW, Chong WL, Ng MP, Ong CN, Halliwell B.

Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore.

OBJECTIVE: Evidence on the efficacy of high-dose coenzyme Q10 (CoQ10) in Parkinson's disease (PD) is conflicting. An open-label dose-escalation study was performed to examine the effects of CoQ10 on biomarkers of oxidative damage and clinical outcomes in 16 subjects with early idiopathic PD.

METHODS AND RESULTS: Each dose (400, 800, 1200, and 2400 mg/day) was consumed daily for 2 weeks. High-dose CoQ10 was well tolerated and improvements in the total Unified Parkinson's Disease Rating Scale (median, 37 vs. 27; p=0.048) were observed following study completion. Plasma F2-isoprostanes (adjusted for arachidonate) were significantly reduced in the 400-1200 mg/day dose range, but increased at 2400 mg/day dosage. A similar pattern of change was observed with serum phospholipase A2 activities. Levels of plasma all trans-retinol, plasma total tocopherol, serum uric acid, and serum total cholesterol were unchanged despite an increase in the CoQ10 dosage. Subjects with symptomatic benefits from CoQ10 (decrease in total UPDRS >10 points) had lower baseline plasma ubiquinol (p=0.07, Mann-Whitney U test) and decreased F2-isoprostanes per unit arachidonate (p=0.04, Wilcoxon Signed-Ranks test).

CONCLUSIONS: These results lead to the hypothesis that the therapeutic response to CoQ10 depends on baseline levels of ubiquinol and whether the dosage of CoQ10 used can ameliorate the burden of oxidative damage.

PMID: 24410614