

Randomized, Double-blind, Placebo-Controlled Trial on Symptomatic Effects of Coenzyme Q₁₀ in Parkinson Disease

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Background Major hallmarks in the pathophysiology of Parkinson disease are cellular energy depletion and oxidative stress leading to cellular dysfunction and death. Coenzyme Q₁₀ (CoQ₁₀) is an electron acceptor bridging mitochondrial complexes I and II/III and a potent antioxidant that consistently partially recovers the function of dopaminergic neurons.

Objective To determine whether nanoparticulate CoQ₁₀ is safe and displays symptomatic effects in patients with midstage Parkinson disease without motor fluctuations.

Design Multicenter, randomized, double-blind, placebo-controlled, stratified, parallel-group, single-dose trial.

Setting Academic and nonacademic movement disorder clinics.

Patients One hundred thirty-one patients with Parkinson disease without motor fluctuations and a stable antiparkinsonian treatment.

Intervention Random assignment to placebo or nanoparticulate CoQ₁₀ (100 mg 3 times a day) for a treatment period of 3 months. Stratification criterion was levodopa treatment.

Main Outcome Measure The subjects underwent evaluation with the Unified Parkinson's Disease Rating Scale (UPDRS) at each visit on a monthly basis. The primary outcome variable was the change of the sum score of the UPDRS parts II and III between the baseline and 3-month visits.

Results One hundred thirty-one subjects were randomized according to the protocol. The mean changes of the sum UPDRS parts II/III score were -3.69 for the placebo group and -3.33 for the CoQ₁₀ group ($P = .82$). Statistical analysis according to the stratification did not result in significant changes of the primary outcome variable. No secondary outcome measure showed a significant change between the placebo group and the CoQ₁₀ group. The frequency and quality of adverse events were similar in both treatment groups.

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Conclusions Nanoparticulate CoQ₁₀ at a dosage of 300 mg/d is safe and well tolerated and leads to plasma levels similar to 1200 mg/d of standard formulations. Add-on CoQ₁₀ does not display symptomatic effects in midstage Parkinson disease.

Trial Registration clinicaltrials.gov Identifier: [NCT00180037](#)

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