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Effects of coenzyme Q10 supplementation (300 mg/day) on antioxidation and anti-inflammation in coronary artery disease patients during statins therapy: a randomized, placebo-controlled trial.

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Abstract

BACKGROUND:

High oxidative stress and chronic inflammation can contribute to the pathogenesis of coronary artery disease (CAD). Coenzyme Q10 is an endogenous lipid-soluble antioxidant. Statins therapy can reduce the biosynthesis of coenzyme Q10. The purpose of this study was to investigate the **effects of a coenzyme Q10 supplement (300 mg/d; 150 mg/b.i.d)** on antioxidation and anti-inflammation in patients who have CAD during statins therapy.

METHODS:

Patients who were identified by cardiac catheterization as having at least 50% stenosis of one major coronary artery and who were treated with statins for at least one month were enrolled in this study. The subjects (n = 51) were randomly assigned to the placebo (n = 24) and coenzyme Q10 groups (Q10-300 group, n = 27). The intervention was administered for 12 weeks. The concentrations of coenzyme Q10, vitamin E, antioxidant enzymes activities (superoxide dismutase, catalase, and glutathione peroxidase), and inflammatory markers [C-reactive protein (CRP), tumor necrosis factor-alpha (TNF-alpha), and interleukin-6 (IL-6)] were measured in the 42 subjects (placebo, n = 19; Q10-300, n = 23) who completed the study.

RESULTS:

The levels of the plasma coenzyme Q10 ($P < 0.001$) and antioxidant enzymes activities ($P < 0.05$) were significantly higher after coenzyme Q10 supplementation. **The levels of inflammatory markers (TNF-alpha, $P = 0.039$) were significantly lower after coenzyme Q10 supplementation. The subjects in the Q10-300 group had significantly higher vitamin E ($P = 0.043$) and the antioxidant enzymes activities ($P < 0.05$) than the placebo group at week 12.** The level of plasma coenzyme Q10 was significantly positively correlated with vitamin E ($P = 0.008$) and antioxidant enzymes activities ($P < 0.05$) and was negatively correlated with TNF-alpha ($P = 0.034$) and IL-6 ($P = 0.027$) after coenzyme Q10 supplementation.

CONCLUSION:

Coenzyme Q10 supplementation at 300 mg/d significantly enhances antioxidant enzymes activities and lowers inflammation in patients who have CAD during statins therapy.