

# Abstract

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## The role of coenzyme Q10 in statin-associated myopathy: a systematic review.

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**BACKGROUND:** Statins (3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors) are currently the most effective medications for reducing low-density lipoprotein cholesterol concentrations. Although generally safe, they have been associated with a variety of myopathic complaints.

**OBJECTIVE:** Statins block production of farnesyl pyrophosphate, an intermediate in the synthesis of ubiquinone or coenzyme Q10 (CoQ10). This fact, plus the role of CoQ10 in mitochondrial energy production, has prompted the hypothesis that statin-induced CoQ10 deficiency is involved in the pathogenesis of statin myopathy.

**METHODS:** We identified English language articles relating statin treatment and CoQ10 levels via a PubMed search through August 2006. Abstracts were reviewed and articles addressing the relationship between statin treatment and CoQ10 levels were examined in detail.

**DISCUSSION:** Statin treatment reduces circulating levels of CoQ10. The effect of statin therapy on intramuscular levels of CoQ10 is not clear, and data on intramuscular CoQ10 levels in symptomatic patients with statin-associated myopathy are scarce. Mitochondrial function may be impaired by statin therapy, and this effect may be exacerbated by exercise. Supplementation can raise the circulating levels of CoQ10, but data on the effect of CoQ10 supplementation on myopathic symptoms are scarce and contradictory.

**CONCLUSION:** We conclude that there is insufficient evidence to prove the etiologic role of CoQ10 deficiency in statin-associated myopathy and that large, well-designed clinical trials are required to address this issue. The routine use of CoQ10 cannot be recommended in statin-treated patients. Nevertheless, there are no known risks to this supplement and there is some anecdotal and preliminary trial evidence of its effectiveness. Consequently, CoQ10 can be tested in patients requiring statin treatment, who develop statin myalgia, and who cannot be satisfactorily treated with other agents. Some patients may respond, if only via a placebo effect.

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