NovaQ10

Hypertension

The results of several small, uncontrolled studies in humans suggest that coenzyme Q10 supplementation could be beneficial in the treatment of hypertension (37). More recently, two short-term placebo-controlled trials found that coenzyme Q10 supplementation resulted in moderate blood pressure decreases in hypertensive individuals. The addition of 120 mg/day of coenzyme Q10 to conventional medical therapy for eight weeks in patients with hypertension and coronary artery disease decreased systolic blood pressure by an average of 12 mm Hg and diastolic blood pressure by an average of 6 mm Hg, in comparison to a placebo containing B-complex vitamins (39). In patients with isolated systolic hypertension, supplementation with both coenzyme Q10 (120 mg/day) and vitamin E (300 IU/day) for 12 weeks resulted in an average decrease of 17 mm Hg in systolic blood pressure compared with 300 IU/day of vitamin E (300 IU/day) alone (40). A 2007 meta-analysis of 12 clinical trials, including 362 hypertensive patients, found that supplemental coenzyme Q10 reduces systolic blood pressure by 11-17 mm Hg and diastolic blood pressure by 8-10 mm Hg (41). The four randomized controlled trials included in this meta-analysis used doses of 100-120 mg/day of coenzyme Q10.

Vascular endothelial function (blood vessel dilation)

Normal function of the inner lining of blood vessels, known as the vascular endothelium, plays an important role in preventing cardiovascular diseases (42). Atherosclerosis is associated with impairment of vascular endothelial function, thereby compromising the ability of blood vessels to relax and permit normal blood flow. Endothelium-dependent blood vessel relaxation (vasodilation) is impaired in individuals with elevated serum cholesterol levels as well as in patients with coronary artery disease or diabetes. One placebo-controlled trial found that coenzyme Q10 supplementation (200 mg/day) for 12 weeks improved endothelium-dependent vasodilation in diabetic patients with abnormal serum lipid profiles, although it did not restore vasodilation to levels seen in non-diabetic individuals (43). Another placebo-controlled study in 23 type 2 diabetics taking statins (HMG-CoA reductase inhibitors) found that 200 mg/day of coenzyme Q10 for 12 weeks improved flow-mediated dilatation, but not nitrate-mediated dilatation, of the brachial artery (44). However, a placebo-controlled trial in 80 type 2 diabetics found that this supplementation protocol did not improve endothelial function (45).

In a study of 12 individuals with high serum cholesterol levels and endothelial dysfunction who were otherwise healthy, supplementation with 150 mg/day of coenzyme Q10 did not affect endothelium-dependent vasodilation (46). A prospective, randomized cross-over study of 25 men with endothelial dysfunction found that coenzyme Q10 supplementation (150 mg/day) significantly improved endothelial function, similar to that of a lipid-lowering medication (47). Yet, it is important to mention that this study was not placebo-controlled and, importantly, the authors reported that the subjects' mean baseline for flow-mediated vasodilation was below zero. A randomized, double-blind, placebo-controlled trial in 22 patients with coronary artery disease found that 300 mg/day of coenzyme Q10 for one month improved endothelium-dependent vasodilation (48). Another randomized, double-blind, placebo-controlled trial in 56 patients with ischemic left ventricular systolic dysfunction reported that 300 mg/day of coenzyme Q10 for eight weeks significantly improved measures of endothelial dysfunction (49). A 2011 meta-analysis examining the results of five randomized controlled trials, including 194 subjects, found that supplemental coenzyme Q10 (150-300 mg/day for four to 12 weeks) resulted in a clinically significant, 1.7% increase in flow-dependent endothelial-mediated dilation (50). Large-scale studies are needed to further elucidate the therapeutic role of coenzyme Q10 in endothelial dysfunction.