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**Coenzyme Q<sub>10</sub> improves contractility of dysfunctional myocardium in chronic heart failure**

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**Abstract**

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**Keywords:** Coenzyme Q<sub>10</sub>; chronic heart failure; left ventricular contractility; functional capacity

**Abstract**

*Background:* There is evidence that plasma CoQ<sub>10</sub> levels decrease in patients with advanced chronic heart failure (CHF).

*Objective:* To investigate whether oral CoQ<sub>10</sub> supplementation could improve cardiocirculatory efficiency in patients with CHF.

*Methods:* We studied 21 patients in NYHA class II and III (18M, 3W, mean age 59 ±9 years) with stable CHF secondary to ischemic heart disease (ejection fraction 37 ± 7%), using a double-blind, placebo-controlled cross-over design. Patients were assigned to oral CoQ<sub>10</sub> (100 mg tid) and to placebo for 4 weeks, respectively.

*Results:* CoQ<sub>10</sub> supplementation resulted in a threefold increase in plasma CoQ<sub>10</sub> level (P<0.0001 vs placebo). Systolic wall thickening score index (SWTI) was improved both at rest and peak dobutamine stress echo after CoQ<sub>10</sub> supplementation (+12.1 and 15.6%, respectively, P<0.05 vs placebo). Left ventricular ejection fraction improved significantly also at peak dobutamine (15% from study entry P<0.0001) in relation to a decrease in LV end-systolic volume index (from 57 ± 7 mL/m<sup>2</sup> to 45 mL/m<sup>2</sup>, P<0.001). Improvement in the contractile response was more evident among initially akinetic (+33%) and hypokinetic (+25%) segments than dyskinetic ones (+6%). Improvement in SWTI was correlated with changes in plasma CoQ<sub>10</sub> levels (r=-0.52, P<0.005). Peak VO<sub>2</sub> was also improved after CoQ<sub>10</sub> as compared with placebo (+13%, <0.005). No side effects were reported with CoQ<sub>10</sub>.

*Conclusions:* Oral CoQ<sub>10</sub> improves LV contractility in CHF without any side effects. This improvement is associated with an enhanced functional capacity.

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