

The Use of Coenzyme Q10 in Hypertension: An Educational Article and Expert Opinion

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Abstract

Dietary health supplements have been increasingly used in the prevention and treatment of chronic disorders. Coenzyme Q10 is a dietary health supplement that has been reported to have an anti-oxidant property as early as the 1966. The aim of this paper is to review coenzyme Q10 research findings relevant to its use in hypertension. Expert opinion: The current evidence-base expert opinion suggests the coenzyme Q10 can be used as an anti-hypertensive agent in early hypertensive disease and in mild hypertension without significant irreversible vascular changes and also in isolated systolic hypertension.

Keywords: Co-enzyme Q10, new hypertension treatment, expert opinion

Dietary health supplements have been increasingly used in the prevention and treatment of chronic disorders (Al-Mosawi AJ., 2012; Al-Mosawi AJ., 2021; Al-Mosawi AJ., 2022). Coenzyme Q10 is a dietary health supplement that has been reported to have an anti-oxidant property as early as the 1966 (Mellors A & Tappel AL., 1966). The aim of this paper is to review coenzyme Q10 research findings relevant to its use in hypertension.

In 1976, Yamagami and colleagues reported the treatment of five patients with primary hypertension associated with 20-40% deficiency of succinate dehydrogenase-co-enzyme Q10 reductase in leucocytes. A 74-year old man experienced lowering of the systolic blood pressure (p less than 0.001), the diastolic blood pressure was reduced (p less than 0.05) in association with correction of coenzyme Q10 inadequate activity. Four patients were treated with coenzyme Q10 for 3-5 months also experienced significant lowering (p less than 0.05 to p less than 0.001) of diastolic pressure. Yamagami and colleagues attributed the hypotensive effect of coenzyme Q10 to an increased coenzyme activity which results in improvement in bioenergetics by correcting the deficiency of coenzyme Q10 (Yamagami T, Shibata N & Folkers K., 1976).

In 1994, Littarru et al from Italy treated 26 patients with primary arterial hypertension with oral coenzyme Q10, 100 mg daily in two divided doses for 10 weeks. Treatment was associated with lowering of the systolic blood pressure from 164.5 \pm 3.1 to 146.7 \pm 4.1 mmHg and lowering of diastolic blood pressure from 98.1 \pm 1.7 to 86.1 \pm 1.3 mmHg ($P < 0.001$). Treatment was associated with elevation of plasma coenzyme Q10 level and reduction of serum cholesterol ($P < 0.005$) with an increase in serum HDL ($P < 0.01$). In five patients, it was possible to demonstrate a decrease in peripheral resistances which was associated with radionuclide angiocardiology ($P < 0.02$). Treatment was not associated in a change in plasma rennin activity, serum and urinary sodium and potassium, and urinary aldosterone (Digiesi V, Cantini F, Oradei A, Bisi G, Guarino GC, Brocchi A, Bellandi F, Mancini M & Littarru GP., 1994).

Also in 1994, Langsjoen et al from the United States reported the addition of oral coenzyme Q10 (Mean dose: 225 mg daily) to the antihypertensive drug treatment of 108 patients with primary symptomatic hypertension.

Coenzyme Q10 dose was not modified according to the response to treatment and blood levels of coenzyme Q10. The addition of coenzyme Q10 allowed in most patients gradual reduction of antihypertensive medications within the first 1 to 6 months. In 9.4% of the patients it was possible to observe a marked improvement in left ventricular wall thickness and diastolic function on echocardiograms (Langsjoen P, Langsjoen P, Willis R & Folkers K., 1994).

In 1999, Singh et al from India reported a study which showed the addition of coenzyme Q10 (120 mg daily in two divided doses) to the antihypertensive medications for two months was associated with lowering of blood pressure which was attributed to reducing oxidative stress and insulin response (Singh RB, Niaz MA, Rastogi SS, Shukla PK & Thakur AS., 1999).

In 2001, Burke and colleagues reported a placebo controlled study which included 83 patients with only systolic hypertension (46 males and 37 females). The study showed that treatment of coenzyme Q10 120 mg daily in two divided doses for three months was associated lowering of the systolic blood pressure without the occurrence of orthostatic hypotension. Burke and colleagues suggested that coenzyme Q10 is a safe alternative to antihypertensive drugs in patients with systolic hypertension (Burke BE, Neuenschwander R & Olson RD., 2001).

In 2007, Rosenfeldt et al from Australia reported a meta-analytic study which included 12 clinical studies (362 patients) including 3 randomized controlled studies, 1 crossover study and 8 open label studies. The meta-analysis suggested that coenzyme Q10 can lower systolic pressure by up to 17 mm Hg and can also diastolic pressure by up to 10 mm Hg without important side effects (Rosenfeldt FL, Haas SJ, Krum H, Hadj A, Ng K, Leong JY & Watts GF., 2007).

Expert Opinion

The current evidence-base expert opinion suggests the coenzyme Q10 can used as anti-hypotensive agent in early hypertensive disease and in mild hypertension without significant irreversible vascular changes and also in isolated systolic hypertension.

Conflict of Interest: None.

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