

Abstract

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Decrease in oxidative stress through supplementation of vitamins C and E is associated with a reduction in blood pressure in patients with essential hypertension.

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OBJECTIVE: Oxidative stress has been associated with mechanisms of EH (essential hypertension). The aim of the present study was to test the hypothesis that the antioxidant properties of vitamins C and E are associated with a decrease in BP (blood pressure) in patients with EH.

METHODS: A randomized double-blind placebo-controlled clinical trial was conducted in 110 men with grade 1 EH (35-60 years of age without obesity, dyslipidaemia and diabetes mellitus, non-smokers, not undergoing vigorous physical exercise, without the use of any medication and/or high consumption of fruit and vegetables). Participants were randomly assigned to receive either vitamins C+E [vitamin C (1 g/day) plus vitamin E (400 international units/day)] or placebo for 8 weeks. Measurements included 24 h ambulatory BP and blood analysis of oxidative-stress-related parameters in erythrocytes (GSH/GSSH ratio, antioxidant enzymes and malondialdehyde) and plasma [FRAP (ferric reducing ability of plasma)], and levels of 8-isoprostane, vitamins C and E were measured at baseline and after treatment.

RESULTS: Following administration of vitamins C+E, patients with EH had significantly lower systolic BP, diastolic BP and mean arterial BP and higher erythrocyte and serum antioxidant capacity compared with either placebo-treated patients with EH or the patients with EH at baseline prior to treatment. BP correlated positively with plasma 8-isoprostane levels and negatively with plasma FRAP levels in the vitamins C+E- and placebo-treated groups.

CONCLUSION: In conclusion, the present study supports the view that oxidative stress is involved in the pathogenesis of EH, and that enhancement of antioxidant status by supplementation with vitamins C and E in patients with EH is associated with lower BP. This suggests intervention with antioxidants as an adjunct therapy for hypertension.

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