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


Laboratory of Renal Pathophysiology, Molecular and Clinical Pharmacology Program, Institute of Biomedical Sciences, Faculty of Medicine, University of Chile, Santiago, Chile.

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.