

Abstract

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Supplementation with vitamins C and E improves arterial stiffness and endothelial function in essential hypertensive patients.

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BACKGROUND: Essential hypertension is characterized by endothelial dysfunction, arterial stiffness, and increased oxidative stress. We evaluated the effect of short-term combined treatment with the antioxidants vitamins C and E on endothelial function, arterial stiffness, and oxidative stress in untreated essential hypertensive patients.

METHODS: A randomized, double-blind, placebo-controlled, crossover study design was used to assign 30 male essential hypertensive patients to either vitamin C (1 g) and vitamin E (400 IU) or placebo for 8 weeks. Endothelium-dependent response was assessed as flow-mediated dilation (FMD) of the brachial artery. Arterial stiffness was assessed as central pulse wave velocity (PWV) and augmentation index (AIx). Plasma markers of oxidative stress and antioxidant status were measured.

RESULTS: After vitamin supplementation, FMD was significantly improved. Central PWV was significantly reduced, while AIx tended to decrease. Plasma vitamin levels and antioxidant capacity increased significantly. Levels of oxidative stress decreased. Changes in central PWV were related to changes in levels of oxidative stress.

CONCLUSIONS: Combined treatment with vitamins C and E has beneficial effects on endothelium-dependent vasodilation and arterial stiffness in untreated, essential hypertensive patients. This effect is associated with changes in plasma markers of oxidative stress.

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