

Abstract

Hypertens Res. 2008 May;31(5):1007-13.

Antioxidant treatment with alpha-tocopherol improves erectile function in hypertensive rats.

Ushiyama M, Kuramochi T, Yagi S, Katayama S.

Fourth Department of Internal Medicine, Saitama Medical School, Saitama, Japan.

OBJECTIVE: There is no known treatment for erectile dysfunction (ED) in hypertensive patients. We tested whether or not antioxidative therapy improves ED in the setting of hypertension.

METHODS: Spontaneously hypertensive rats (SHRs) were treated with a control chow or an alpha-tocopherol-enriched chow (12 or 24 mg/100 g chow) for 8 weeks. The isometric tension of corpus cavernosum strips from these SHRs was recorded. nNOS and HO-2 gene expression and NOx, cGMP, thiobarbituric acid-reacting substance (TBARS), and superoxide dismutase (SOD) activity levels were determined in serum and tissue.

RESULTS: Relaxation in response to electrical field stimulation (EFS) in the corpus cavernosum increased after the administration of alpha-tocopherol at a dose of 24 mg/100 g chow. This effect was inhibited by a nitric oxide synthase (NOS) inhibitor and by a heme oxygenase (HO) inhibitor, nNOS and HO-2 gene expression and NOx concentrations in the corpus cavernosum were similar between 24 mg alpha-tocopherol-fed SHRs and controls. Tissue cGMP levels were greater in alpha-tocopherol-fed SHRs than in controls. Treatment with 24 mg alpha-tocopherol decreased TBARS levels and increased SOD activity in the serum and corpus cavernosum. Relaxation in response to acetylcholine chloride in the corpus cavernosum was improved with alpha-tocopherol treatment at each dose.

CONCLUSIONS: These results suggest that alpha-tocopherol treatment increases the diminished relaxation in the corpus cavernosum of SHRs by improving neuronal or endothelial function related to nitric oxide and carbon monoxide. This, in turn, indicates that antioxidant therapy may play a role in treatment for ED in hypertensive patients.

PMID: 18712056