

## Relationship between oxidative stress and essential hypertension.

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This study investigated the association of blood pressure with blood oxidative stress-related parameters in normotensive and hypertensive subjects. A cross-sectional design was applied to 31 hypertensive patients and 35 healthy normotensive subjects. All subjects were men between the ages of 35 and 60 years. Exclusion criteria were obesity, dyslipidemia, diabetes mellitus, smoking and current use of any medication. All patients underwent 24-h ambulatory blood pressure monitoring and sampling of blood and urine. Antioxidant enzymes activity, reduced/oxidized glutathione ratio (GSH/GSSG), and lipid peroxidation (malondialdehyde) were determined in erythrocytes. Parameters measured in the plasma of test subjects were plasma antioxidant status, lipid peroxidation (8-isoprostane), plasma vitamin C and E, and the blood pressure modulators renin, aldosterone, endothelin-1 and homocysteine. Daytime systolic and diastolic blood pressures of hypertensives were negatively correlated with plasma antioxidant capacity ( $r=-0.46$ ,  $p<0.009$  and  $r=-0.48$ ,  $p<0.007$ ), plasma vitamin C levels ( $r=-0.53$ ,  $p<0.003$  and  $r=-0.44$ ,  $p<0.02$ ), erythrocyte activity of antioxidant enzymes, and erythrocyte GSH/GSSG ratio, with hypertensives showing higher levels of oxidative stress. Blood pressures showed a positive correlation with both plasma and urine 8-isoprostane. Neither plasma vitamin E nor the assessed blood pressure modulator levels showed significant differences between the groups or correlation with blood pressures. **These findings demonstrate a strong association between blood pressure and some oxidative stress-related parameters and suggest a possible role of oxidative stress in the pathophysiology of essential hypertension.**

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