

Abstract

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Vitamin C restores blood pressure and vasodilator response during mental stress in obese children.

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BACKGROUND: Peripheral vasodilation response plays an important role in the pathophysiology of obesity and heart disease.

OBJECTIVE: To evaluate the chronic effect of vitamin C (VitC) supplementation on blood pressure and on vasodilation response to mental stress.

METHODS: In a double-blind, randomized and prospective study we evaluated obese children with 8 to 12 years in 2 similar groups: 1) supplemented with 500 mg VitC (n = 11) and 2) placebo (n = 10) for 45 days. Eight age-matched lean control children were also studied. We evaluated: mean blood pressure (MBP), heart rate (HR) and forearm blood flow by venous occlusion plethysmography. Forearm vascular conductance (FVC) was calculated by: (forearm blood flow/PAM) X100.

RESULTS: On pre-intervention evaluations obese children showed higher MBP and lower FVC compared to lean control children. After intervention VitC diminished MBP at rest (81 ± 2 vs 75 ± 1 mmHg, $p = 0.01$), whereas placebo did not promote changes in MBP ($p = 0.58$). In addition, VitC promoted FVC increase at rest (3.40 ± 0.5 vs 5.09 ± 0.6 un, $p = 0.04$) and during the mental stress (3.92 ± 0.5 vs 6.68 ± 0.9 un, $p = 0.03$). Moreover, after VitC supplementation FVC levels were similar to the lean control children at rest (5.09 ± 0.6 vs 5.82 ± 0.4 un, $p > 0.05$) and during mental stress (6.68 ± 0.9 vs 7.35 ± 0.5 un, $p > 0.05$).

CONCLUSION: VitC supplementation reduced the MBP and restored peripheral vasodilatation response during mental stress in obese children.

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