

Effect of Acute Antioxidant Consumption on Cardiac Baroreflex Sensitivity in Young Healthy Adults

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ABSTRACT

There is an emerging body of evidence in animals indicating that elevated oxidative stress impairs baroreflex sensitivity (BRS) function, however studies in healthy humans have yielded equivocal results. One potential reason for this discrepancy is that previous studies have used individual antioxidant treatments (e.g., Vitamin C only) to investigate the effect of oxidative stress on BRS. Recent studies in healthy humans have demonstrated significant reductions in reactive oxygen species using an antioxidant cocktail (AOC; Vitamin C, Vitamin E, and Co-enzyme Q10) suggesting the effectiveness of this treatment. Whether this AOC induced reduction in oxidative species affects BRS in young, healthy adults remains unknown. **PURPOSE:** We tested the hypothesis that AOC will improve cardiac BRS in young healthy adults. **METHODS:** Five young men were studied on two separate days: placebo (sugar pills) and AOC (2000 mg Vitamin C, 150 IU Vitamin E and 100 mg Co-enzyme Q10) performed in random order. Resting heart rate (ECG) and arterial blood pressure (automated sphygmomanometer and finger photoplethysmography) were measured 90 minutes after AOC or placebo (a time period this AOC has been shown to have peak effects on oxidative stress). Spontaneous cardiac BRS was determined for all sequences combined (overall BRS), and also separately for up (increase systolic blood pressure: increase R-R interval) and down (decrease systolic blood pressure: decrease R-R interval) sequences. **RESULTS:** Systolic blood pressure on AOC day tended to be lower relative to the placebo day (127 ± 4 vs. 131 ± 5 ; $p=0.098$). However, no differences in overall cardiac BRS were found between placebo and AOC (18.0 ± 2.7 vs. 17.3 ± 2.6 ms/mmHg; $p=0.59$). Likewise, up sequences (17.02 ± 2.9 vs. 14.04 ± 4.0 ms/mmHg; $p=0.51$) and down sequences (18.0 ± 2.7 placebo vs. 18.0 ± 2.6 ms/mmHg AOC; $p=0.98$) were not different between conditions. Equal number of sequences were found between the placebo and AOC days. **CONCLUSION:** These preliminary data suggest that antioxidant treatment does not affect resting cardiac BRS in young, healthy men.