

Abstract

Does Acute Supplementation with Nitrate-Rich Beetroot Juice Benefit Older Adults More than Younger Adults [†]

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Background: To investigate age-related effects of acute dietary nitrate (NO_3^-) supplementation on cardiovascular responses, cognition and mood.

Methods: 13 younger (18–30 y) and 11 older (50–70 y) adults consumed 150 mL of either NO_3^- rich beetroot juice (BR; 10.5 mmol NO_3^-) or placebo solution (PL; 1 mmol NO_3^-) in a double blind, crossover design, 2.25 h prior to a 30-min treadmill walk. Nitrate and nitrite blood concentrations, blood pressure (BP), heart rate (HR), oxygen uptake kinetics, cognitive function, mood and perceptual tests were performed throughout each trial.

Results: BR consumption significantly increased plasma nitrate ($p < 0.001$) and nitrite ($p = 0.003$) concentrations and reduced systolic ($p < 0.001$) and diastolic BP ($p = 0.013$) compared to placebo within each age group. Older adults showed a greater elevation in plasma nitrite ($p = 0.038$) and a greater reduction in diastolic BP ($p = 0.005$) following BR consumption than younger adults. Reaction time was improved in the Stroop test following BR supplementation for both groups ($p = 0.045$). However, there were no main effects of treatment or interaction of treatment, time and age for HR, oxygen uptake, other cognitive tests, and mood or perceptual measures examined following BR supplementation in either age group ($p > 0.05$).

Conclusions: For the first time it has been shown that acute BR supplementation increased plasma nitrite concentration and reduced diastolic BP to a greater degree in older adults; whilst, systolic BP was reduced in both older and younger adults. These results suggest nitrate enriched BR may prove a successful dietary intervention strategy for reducing or delaying development of prehypertension to hypertension.

Supplementary Materials: The PDF of oral presentation is available online at www.mdpi.com/2504-3900/8/1/26/s1.



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