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Effects of chronic supplementation with nitrate-rich beetroot juice on cardiovascular responses in healthy adults

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Statement of the Problem: Acute and short-term supplementation with nitrate-rich (NO₃⁻) beetroot juice has been shown to improve cardiovascular health and function in healthy adults; however, there are few studies investigating the prolonged effects of dietary nitrate supplementation on cardiovascular responses. The purpose of this study was to investigate the effects of acute (day 1) versus prolonged (28 days) dietary nitrate (NO₃⁻) supplementation on cardiovascular health and function in healthy adults.

Methodology & Theoretical Orientation: Based on preliminary data from an ongoing larger study of 48 participants (24 per group). Nine healthy adults consumed 250 ml of nitrate-rich Beetroot juice (BR; 10.5 mmol NO₃⁻) and seven healthy adults consumed 250 ml of Placebo solution (PL; 1 mmol NO₃⁻) daily for a 28-day period, in a double blind, randomized control trial design. Blood Pressure (BP), Heart Rate (HR), mean Arterial Pressure (MAP) and Systemic Vascular Resistance (SVR) were measured before and 2.25 h post-consumption, on days 1 (acute), 14 and 28 (chronic) of supplementation.

Findings: Preliminary results have shown acute BR consumption reduced systolic ($p=0.027$) and diastolic ($p=0.008$) BP, and MAP ($p=0.019$) compared to PL on day 1. There were no acute effects of BR supplementation on HR or SVR. On day 14 and day 28 the reduction in BP and MAP were maintained with BR supplementation; however, prolonged BR supplementation did not result in any further reductions in BP, MAP or SVR on days 14 and 28 when compared to day 1 ($p>0.05$).

Conclusion & Significance: These preliminary results suggest that the acute benefits of BR consumption on cardiovascular health and function are maintained during prolonged consumption over a 28-day period.

Biography

Luke A Stanaway is currently completing his PhD in Exercise and Sport Science at Massey University, New Zealand. He obtained his first journal publication in the first year of his PhD, with a systematic review in *Nutrients* and currently has a primary research article under review. He is the founding director of the sport and wellness app Zenforce sports and was the sport scientist for the New Zealand football under 17's team in the last world cup cycle. His PhD centres around the effects of acute and chronic supplementation of nitrate-rich beetroot juice on cardiovascular function, cognition and mood in younger and older adults. He also has interests in all areas of nutrition and exercise as a personal trainer and nutritionist.

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