Blood pressure-lowering effects of beetroot juice and novel beetroot-enriched bread products in normotensive male subjects.

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Abstract

A number of vegetables have a high nitrate content which after ingestion can be reduced to nitrite by oral bacteria, and further to vasoprotective NO endogenously. In the present study, two separate randomly controlled, single-blind, cross-over, postprandial studies were performed in normotensive volunteers. Ambulatory blood pressure (BP) was measured over a 24 h period following consumption of either four doses of beetroot juice (BJ), 0, 100, 250 and 500 g (n 18), or three bread products, control bread (0 g beetroot), red beetroot- and white beetroot-enriched breads (n 14). Total urinary nitrate/nitrite (NO\textsubscript{x}) was measured at baseline, and at 2, 4 and 24 h post-ingestion. BJ consumption significantly, and in a near dose-dependent manner, lowered systolic BP (SBP, \(P<0.01\)) and diastolic BP (DBP, \(P<0.001\)) over a period of 24 h, compared with water control. Furthermore, bread products enriched with 100 g red or white beetroot lowered SBP and DBP over a period of 24 h (red beetroot-enriched bread, \(P<0.05\)), with no statistical differences between the varieties. Total urinary NO\textsubscript{x} significantly increased following the consumption of 100 g (\(P<0.01\)), 250 g (\(P<0.001\)) and 500 g BJ (\(P<0.001\)) and after red beetroot-enriched bread ingestion (\(P<0.05\)), but did not reach significance for white beetroot-enriched bread compared with the no-beetroot condition. These studies demonstrated significant hypotensive effects of a low dose (100 g) of beetroot which was unaffected by processing or the presence of betacyanins. These data strengthen the evidence for cardioprotective BP-lowering effects of dietary nitrate-rich vegetables.

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