**Supplementary Material**

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Figure S1: Flow chart of recruitment

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| **Table S1:** Changes in microvascular forearm blood flow measured by laser Doppler following post-occlusive reactive hyperaemia (PORH) after imputation of missing data points (see methods for details). 23 young and old participants were included in the analysis.  |
|  | **BR 100g**  | **BR 200g** | **BR 300g**  | **1000mg** KNO3 | Time (T), p=0.70Intervention (I), p=0.14T\*I, p=0.38 |
|  |  |  |  |  |  |  | **Minutes** |  |  |  |  |  |
|  | 0 | 150 | 300 | 0 | 150 | 300 | 0 | 150 | 300 | 0 | 150 | 300 |
| **PORH** | 3.62±4.76 | 3.14±4.76 | 3.32±1.07 | 3.38±4.08 | 3.40±3.33 | 3.54±4.69 | 2.88±3.19 | 2.79±4.11 | 3.18±4.11 | 3.24±3.60 | 3.46±5.27 | 3.18±5.06 |

Data presented as mean ± SD. BR = whole beetroot, KNO3 = potassium nitrate (positive control). Repeated measure-Anova was used to test the effects of Time, Intervention and their interaction (independent factors) on PROH (dependent variable). One participant had all PROH value missing.

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| **Table S2:** P values for model parameters for the repeated measure Anova testing whether randomisation sequence had a confounding effects on changes in systolic and diastolic blood pressure (BP) |
| **Systolic BP** | **P** |
| TimeInterventionSequence Time\*SequenceSequence\*Intervention | <0.0010.810.840.190.29 |
| **Diastolic BP** | **P** |
| TimeInterventionSequence Time\*SequenceSequence\*Intervention | <0.0010.860.880.340.33 |

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| **Table S3:** Repeated-Measure Correlations (rrm) testing the association between changes (∆) in diastolic blood pressure (DBP) with changes in nitrate (NO3) and nitrite (NO2) concentrations in young and old participants.  |
| Young | ∆DBP 300min - Bas (mmHg) vs ∆NO3 Bas- 300min (μmol/L) | rrm(35) = -0.19, 95% CI [-0.495, 0.149], p = 0.251 |
| ∆DBP 300min - Bas (mmHg) vs ∆NO2 Bas- 300min (nmol/L) | rrm(35) = -0.29, 95% CI [-0.567, 0.05], p = 0.084 |
| Old | ∆DBP 300min - Bas (mmHg) vs ∆NO3 Bas- 300min (μmol/L) | rrm(35) = -0.24, 95% CI [-0.528, 0.105], p = 0.159 |
| ∆DBP 300min - Bas (mmHg) vs ∆NO2 Bas- 300min (nmol/L) | rrm(35) = -0.32, 95% CI [-0.59, 0.016], p = 0.054 |

Bas, baseline. See methods for specific details on the analysis.