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## The dose-response effect of fruit and vegetable intake on ambulatory blood pressure, in healthy individuals at high risk of cardiovascular disease: a randomised controlled trial

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Ambulatory blood pressure monitoring (ABPM) has greater statistical power to detect true differences in blood pressure values in clinical trials and has greater prognostic significance in cardiovascular target organ damage when compared to clinic measured blood pressure<sup>(1)</sup>. The aim of this study was to examine the dose-response effect of fruit and vegetable (FV) intake on 24-hour AMBP in healthy, overweight adults at high cardiovascular disease risk. Ethical approval was received from the Office for Research Ethics Committees Northern Ireland.

Following a 4 week run-in period, during which FV was limited to <2 portions per day, participants were randomized to consume either 2, 4 or 7 FV portions daily for the next 12 weeks. AMBP was measured over 24-hours using a validated Meditech ABPM-04 system (P.M.S. Ltd, UK) at baseline and post-intervention. Dietary compliance was monitored using completed 4-day food diaries and by measuring a panel of venous blood dietary biomarkers.

In total, 87 participants (64% male; 36% female) with a mean age 56 years (SD 6.0 years) completed the study. Reported FV intake in the 2, 4 and 7 portion groups was 1.8, 3.8 and 7.0 portions per day ( $p < 0.001$ ) respectively. Serum lutein also increased linearly across the groups ( $P$  for Trend  $< 0.001$ ). Body weight remained stable throughout the intervention period ( $p = 0.77$ ). Mean systolic/diastolic blood pressure was 127.8/76.6 mmHg (SD 12.1/8.8) with no significant difference between the groups at baseline. Statistical analysis was performed using one-way analysis of variance with fitted linear trend.

	2 portions/d (n = 28max)			4 portions/d (n = 29max)			7 portions/d (n = 30max)			P <sub>Trend</sub>
	*Mean change	Mean change 95% CI	Within group p value	*Mean change	Mean change 95% CI	Within group p value	*Mean change	Mean change 95% CI	Within group p value	
ABPM Systolic (mmHg)	-3.0	-7.66, 1.66	0.20	+1.2	-2.58, 4.93	0.53	-2.0	-5.25, 1.25	0.22	0.87
ABPM Diastolic (mmHg)	-2.1	-5.54, 1.40	0.23	+0.5	-2.31, 3.21	0.74	-1.28	-3.90, 1.35	0.33	0.82

\*Mean change = mean post-intervention – mean baseline value.

Despite good compliance with the study protocol, we found no evidence of a dose-response effect of FV intake on gold standard ABPM. Our results agree with findings from recent FV intervention trials<sup>(2,3)</sup>. In contrast, the Dietary Approaches to Stop Hypertension trial provides convincing evidence for implementation of a broader dietary approach in relation to blood pressure reduction<sup>(4)</sup>.

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