SUPPLEMENTARY TABLES AND FIGURES

SUPPLEMENTARY TABLE 1 - SEARCH DATABASES

Database	Search Period	Search
MEDLINE	through to May 5, 2013	1. (pulses or fabaceae or lentil$ or chickpea$ or bean$ or pea or peas or legume$ or leguminous) and (blood pressure or BP or SBP or DBP or mean arterial pressure or MAP) 2. Animal 3. 1 NOT 2 4. limit publication types to Clinical Trials, All and Controlled Clinical Trial
EMBASE	through to May 5, 2013	1. (pulses or fabaceae or lentil$ or chickpea$ or bean$ or pea or peas or legume$ or leguminous) and (blood pressure or BP or SBP or DBP or mean arterial pressure or MAP) 2. Animal 3. 1 NOT 2 4. Animal Studies 5. 3 NOT 4 6. limit clinical trials to Clinical Trials and Controlled Clinical Trials
CINAHL	through to May 5, 2013	1. (pulses or fabaceae or lentil$ or chickpea$ or bean$ or pea or peas or legume$ or leguminous) and (blood pressure or BP or SBP or DBP or mean arterial pressure or MAP)
COCHRANE	through to May 5, 2013	1. (pulses or fabaceae or lentil$ or chickpea$ or bean$ or pea or peas or legume$ or leguminous) and (blood pressure or BP or SBP or DBP or mean arterial pressure or MAP)

$ represents additional suffixes of words (i.e., lentil$ = lentil or lentils or lentil-)

SUPPLEMENTARY TABLE 2 - IMPUTATION FORMULAE

	Formula
SD for Combined groups	$\sqrt{\frac{(N_1-1)SD_1^2+(N_2-1)SD_2^2+\frac{N_1N_2}{N_1+N_2}(M_1^2+M_2^2-2M_1M_2)}{N_1+N_2-1}}$
SE for change from baseline	$\frac{\sqrt{SD_{Exp}^2+SD_{Cont}^2-2(Corr\times SD_{Exp}\times SD_{Cont})}}{\sqrt{N}}$

SUPPLEMENTARY TABLE 3 - STUDY QUALITY ASSESSMENT BY HEYLAND MQS

		Abete et al 2009	Abeysekara et al 2012	Belski et al 2011	Gravel et al 2010	Hermsdorff et al 2011	Jenkins et al 2012	Lee et al 2010	Veenstra et al 2010
Methods†	Randomization (n/2)	1	2	2	2	1	1	2	1
	Blinding (n/1)	0	0	1	0	0	0	0	1
	Analysis (n/2)	2	0	0	0	2	2	0	0
Sample ‡	Selection (n/1)	1	1	1	1	0	1	1	0
	Compatability (n/1)	1	1	1	1	1	1	1	1
	Follow-up (n/1)	1	0	0	0	1	0	0	0
Intervention §	Protocol (n/1)	0	1	1	0	1	1	1	1
	Co-interventions (n/2)	1	1	2	2	2	2	2	2
	Crossovers (n/2)	0	0	0	0	0	0	0	0
MQS	(n/13)	7	6	8	6	8	8	7	6

* MQS assigns scores over 9 categories of quality related to study design, sampling procedures, and interventions, for a total of 13 points. Trials that scored ≥8 were considered as high quality.

† Randomization score was assigned as: 2 points = randomized with the methods described; 1 point = randomized without the methods described; 0 points = not randomized with no methods described. Blinding score was assigned as: 1 point = double-blind or 0 points = "other." Analysis was assigned as: 2 points = intention-to-treat; all other types of analyses scored 0 points.

‡ Sample selection score was assigned as: 1 point = consecutive eligible or 0 points = preselected or indeterminate. Sample comparability score was assigned as: 1 point = comparable or 0 points = being comparable at baseline. Follow-up score was assigned as: 1 point = 100% or 0 points = <100%.

§ Treatment protocol score was assigned as: 1 point = reproducibly described or 0 points = poorly described. Co-interventions score was assigned as: 2 points = described and equal, 1 point = described but unequal or indeterminate, or 0 points = not described. Treatment crossovers (where participants were switched from the control treatment to the experimental treatment) score was assigned as: 2 points = ≥10%, 1 point = <10%, and 0 points = not described.

SUPPLEMENTARY TABLE 4 - RISK OF BIAS ASSESSMENT*

	Abete et al. 2009	Abeysekara et al 2012	Belski et al. 2011	Gravel et al. 2010	Hermsdorff et al. 2011	Lee et al. 2009	Veenstra et al. 2010	Jenkins et al. 2012
Random sequence generation †	UR	LR	LR	LR	UR	LR	UR	UR
Allocation concealment ‡	UR	LR	LR	LR	UR	LR	UR	UR
Participant, personnel and assessor blinding §	LR	HR	LR	LR	LR	LR	LR	LR
Incomplete outcome data ‖	LR	LR	UR	UR	LR	LR	UR	LR
Selective reporting ¶	UR	LR	UR	UR	UR	LR	UR	LR

*UR - Unknown risk of bias; LR - Low risk of bias; HR - High risk of bias. Studies were rated UR is inadequate data was provided to asses the risk; LR if the study design and conduction likely did not influence the true outcomes; and HR if the study design and conduction likely influenced the true outcome.

† assessed the method of randomization was described

‡ assessed the quality of randomization

§ assessed degree of blinding to investigators/participants

‖ assessed the influence of missing data on the true outcome

¶ assessed trial preregistration, and statistical power to assess outcome

SUPPLEMENTARY TABLE 5 - SUBGROUP ANALYSES FOR CONTINUOUS PREDICTORS

Subgroup	Range	No. trials	N	β [95% CI]	Residual I^2	P-value
SBP						
Baseline SBP	115mmHg-127mmHg	8	554	0.34 [-0.79,1.48]	75.2%	0.49
Baseline DBP	72mmHg- 79mmHg	8	554	-0.009 [-1.54,1.52]	75.2%	0.99
Change in Fiber	5g/d-14g/d	8	554	-0.02 [-1.02,0.97]	76.5%	0.96
Dose	81g/d-275g/d	8	554	0.01 [-0.04,0.06]	76.7%	0.60
Duration	29 days-1 year	8	554	0.04 [-0.17,0.25]	75.4%	0.66
DBP						
Baseline SBP	115mmHg-127mmHg	8	554	0.15 [-0.27,0.60]	61.4%	0.44
Baseline DBP	72mmHg- 79mmHg	8	554	0.56 [0.088,1.04]	14.6%	0.03
Change in Fiber	5g/d-14g/d	8	554	-0.03 [-0.50,0.43]	63.7%	0.86
Dose	81g/d-275g/d	8	554	0.003 [-0.02,0.03]	63.8%	0.69
Duration	29 days-1 year	8	554	-0.007 [-0.10,0.08]	63.9%	0.85
MAP						
Baseline SBP	115mmHg-127mmHg	8	554	0.27 [-0.09,0.61]	98.0%	0.11
Baseline DBP	72mmHg- 79mmHg	8	554	-0.05 [-0.68,0.58]	97.4%	0.84
Change in Fiber	5g/d-14g/d	8	554	0.06 [-0.34,0.46]	97.0%	0.72
Dose	81g/d-275g/d	8	554	0.009 [-0.008,0.03]	97.6%	0.24
Duration	29 days-1 year	8	554	0.006[-0.09,0.10]	97.6%	0.88

Changes in mean-difference between pulse and control intervention per unit change in each predictor using continuous meta-regressions. A positive B-coefficient implies an increase in SBP, DBP or MAP response with dietary-pulses relative to comparator; and a negative B-coefficient implies a decrease in SBP, DBP or MAP response with dietary-pulses relative to comparator.

SUPPLEMENTARY FIGURE 1 - SBP - SUBGROUP ANALYSES FOR DICHOTOMOUS PREDICTORS

Subgroup	Level	No. trials	N	Mean difference [95% CI] Within subgroups [95% CI]	Mean difference [95% CI] Between subgroups [95% CI]	Residual I^2	P-value
Total		8	554	-2.25 [-4.22,-0.28]	-	-	-
Fiber	< 28g/d	3	162	-3.83 [-9.44,1.77]	2.11 [-4.66,8.89]	76.3%	0.76
	≥ 28g/d	5	392	-1.71 [-5.52,2.08]			
Baseline BP	SBP>120, DBP>80	2	253	-1.60 [-8.60,5.40]	-1.01 [-8.93,6.91]	75.9%	0.77
	SBP≤120, DBP≤80	6	217	-2.61 [-6.31,1.10]			
Design	Crossover	2	103	0.46 [-5.42,6.34]	-3.63 [-10.35,3.10]	71.5%	0.23
	Parallel	6	451	-3.16 [-6.43,0.10]			
Dose	< 100g/d	1	114	1.60 [-6.49,9.69]	-4.49[-13.16,4.17]	72.3%	0.25
	≥ 100g/d	7	348	-2.89 [-5.98,0.20]			
MQS	<8	5	309	-1.61 [-5.66,2.45]	-1.93 [-8.38,4.51]	76.0%	0.49
	≥8	3	245	-3.53 [-8.55,1.47]			
Pulse Type	Mixed	6	387	-2.53 [-6.48,1.41]	-0.44 [-7.66,6.78]	76.4%	0.89
	Single	2	167	-2.10 [-8.15,3.95]			

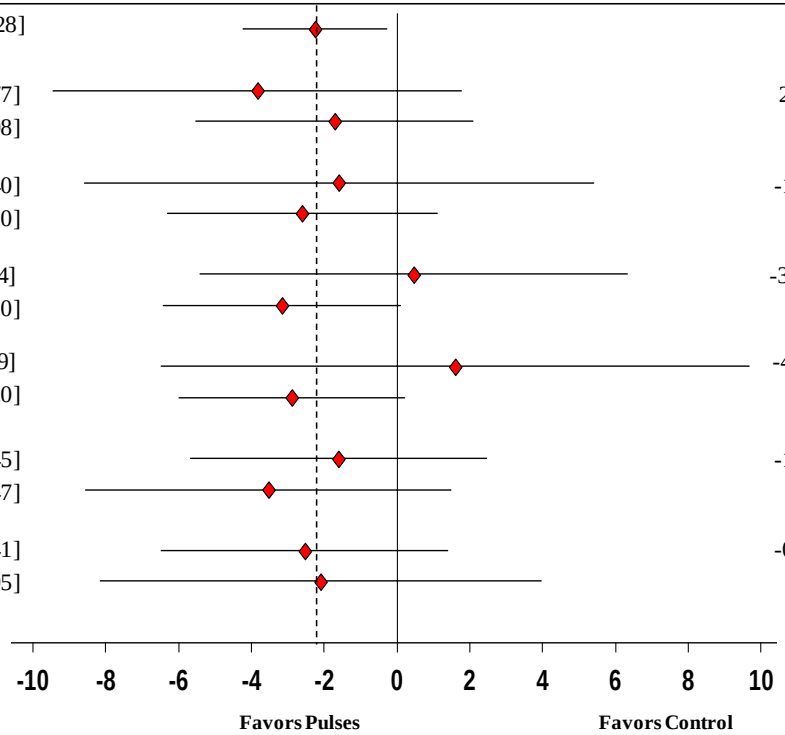


Figure S1. Forest plots of subgroup analyses for dichotomous variables investigating the effect of isocaloric exchange of dietary pulses for other adequate comparators on systolic blood pressure (SBP) in all participants. Subgroups include absolute fiber intake of the treatment group (<28g/d vs. ≥28g/d - based on a 2000 calorie diet), baseline BP (normotensive vs. prehypertensive), design (crossover vs. parallel), dose (<100g/d vs. ≥100g/d), MQS (<8 vs. ≥8), and pulse type (mixed vs. single). Data are mean differences (MD) with 95% CI. N represents the number of participants in each subgroup. Between subgroup differences were analyzed using meta-regression, with the residual I^2 reported as a percent value and significance as a P-value, with $p < 0.05$ as significant.

SUPPLEMENTARY FIGURE 2 - DBP - SUBGROUP ANALYSES FOR DICHOTOMOUS PREDICTORS

Subgroup	Level	No. trials	N	Mean difference [95% CI] Within subgroups [95% CI]	Between subgroups [95% CI]	Residual I^2	P-value
Total		8	554	-0.71 [-1.74,0.31]	-	-	-
Fiber	< 28g/d	3	162	-1.20 [-3.96,1.55]	0.69 [-2.55,3.93]	63.4%	0.62
	≥ 28g/d	5	392	-051 [-2.22,1.19]			
Baseline BP	SBP>120, DBP>80	2	253	-1.02 [-3.97,1.91]	0.43 [-2.96,3.81]	63.8%	0.77
	SBP≤120, DBP≤80	6	217	-0.60 [-2.28,1.08]			
Design	Crossover	2	103	0.71 [-1.84,3.28]	-1.86 [-4.79,1.06]	50.1%	0.17
	Parallel	6	451	-1.14 [-2.55,0.26]			
Dose	< 100g/d	1	114	0.18 [-4.15,4.51]	-0.99 [-5.58,3.60]	62.8%	0.61
	≥ 100g/d	7	348	-0.81 [-2.32,0.70]			
MQS	<8	5	309	0.47 [-0.91,1.86]	-2.19 [-4.03,-0.35]	5.4%	0.03
	≥8	3	245	-1.71 [-2.93,-0.51]			
Pulse Type	Mixed	6	387	-0.91 [-2.71,0.89]	-0.62 [-3.74,2.50]	63.3%	0.64
	Single	2	167	-0.29 [-2.83,2.26]			

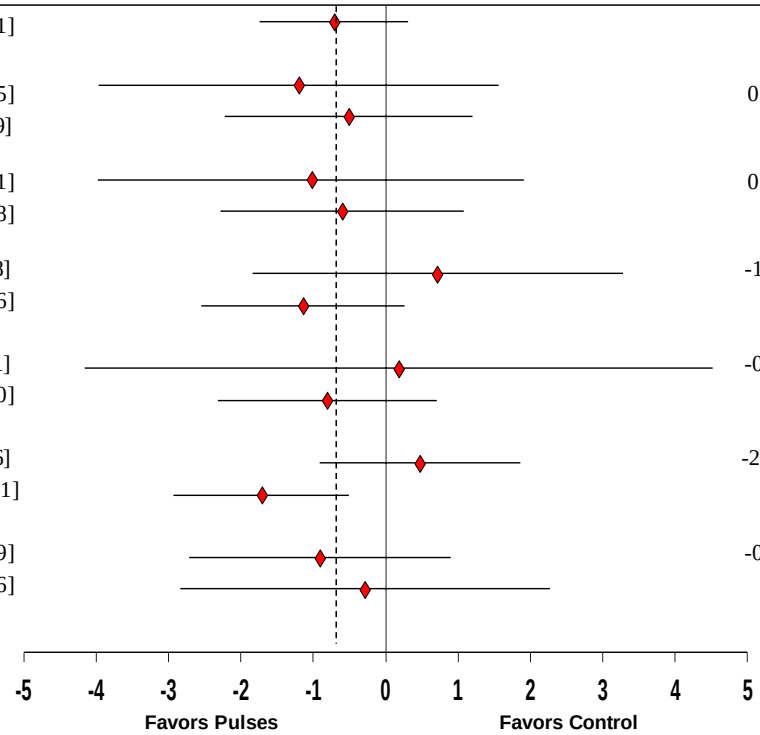


Figure S2. Forest plots of subgroup analyses for dichotomous variables investigating the effect of isocaloric exchange of dietary pulses for other adequate comparators on diastolic blood pressure (DBP) in all participants. Subgroups include absolute fiber intake of the treatment group (<28g/d vs. ≥28g/d - based on a 2000 calorie diet), baseline BP (normotensive vs. prehypertensive), design (crossover vs. parallel), dose (<100g/d vs. ≥100g/d), MQS (<8 vs. ≥8), and pulse type (mixed vs. single). Data are mean differences (MD) with 95% CI. N represents the number of participants in each subgroup. Between subgroup differences were analyzed using meta-regression, with the residual I^2 reported as a percent value and significance as a P-value, with $p < 0.05$ as significant.

SUPPLEMENTARY FIGURE 3 -MAP - SUBGROUP ANALYSES FOR DICHOTOMOUS PREDICTORS

Subgroup	Level	No. trials	N	Mean difference [95% CI] Within subgroups [95% CI]	Mean difference [95% CI] Between subgroups [95% CI]	Residual I^2	P-value
Total		8	554	-0.75 [-1.44,-0.06]	-	-	-
Fiber	< 28g/d	3	162	-1.82 [-3.70,0.06]	1.58 [-0.75,3.91]	98.4%	0.15
	≥ 28g/d	5	392	-0.24 [-1.63,1.14]			
Baseline BP	SBP>120, DBP>80	2	253	-1.47 [-4.07,1.13]	0.88 [-2.12,3.88]	98.4%	0.50
	SBP≤120, DBP≤80	6	217	-0.59 [-2.09,0.90]			
Design	Crossover	2	103	0.42 [-1.84,2.68]	-1.63 [-4.25,0.99]	95.2%	0.18
	Parallel	6	451	-1.22 [-2.53,0.11]			
Dose	< 100g/d	1	114	-0.30 [-3.26,3.89]	-1.28 [-5.09,2.54]	98.4%	0.44
	≥ 100g/d	7	348	-0.97 [-2.35,0.39]			
MQS	<8	5	309	-0.35 [-1.90,1.19]	-1.18 [-3.70,1.32]	96.8%	0.29
	≥8	3	245	-1.54 [-3.52,0.43]			
Pulse Type	Mixed	6	387	-0.86 [-2.43,0.71]	-0.16 [-3.25,2.93]	97.4%	0.90
	Single	2	167	-0.70 [-3.35,1.96]			

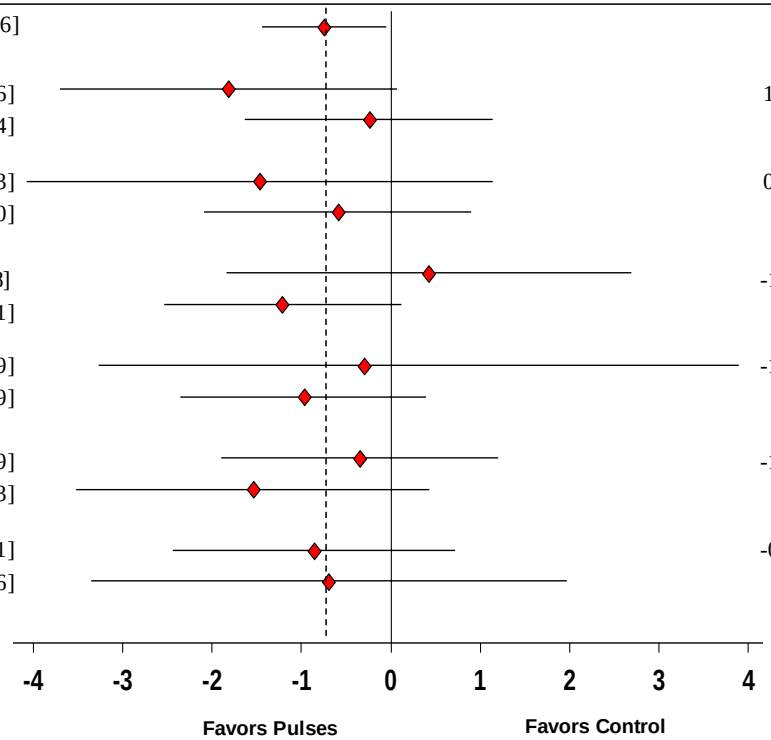
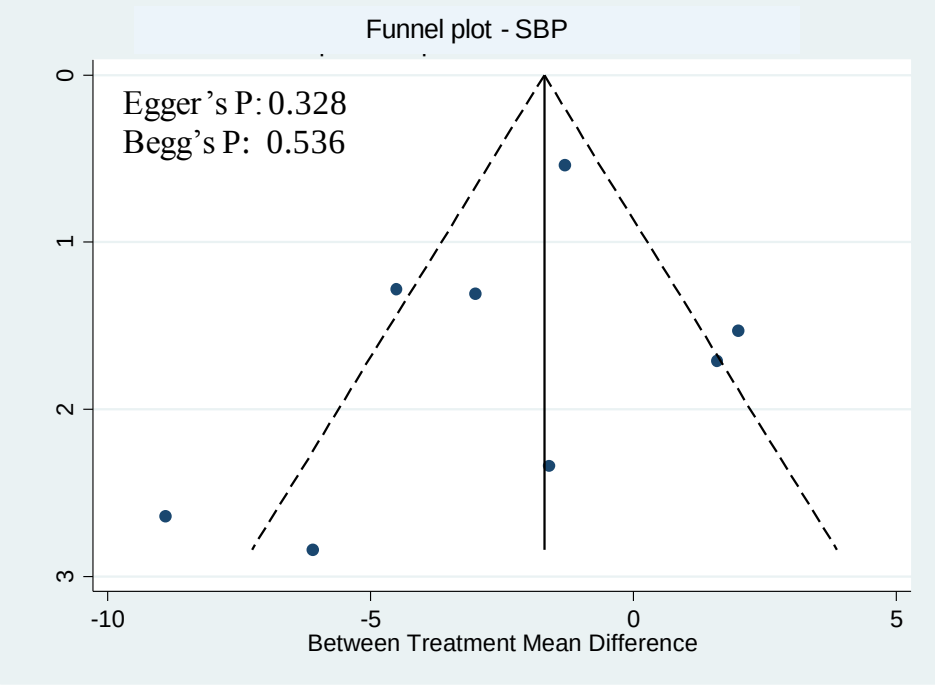


Figure S3. Forest plots of subgroup analyses for dichotomous variables investigating the effect of isocaloric exchange of dietary pulses for other adequate comparators on mean arterial pressure (MAP) in all participants. Subgroups include absolute fiber intake of the treatment group (<28g/d vs. ≥28g/d - based on a 2000 calorie diet), baseline BP (normotensive vs. prehypertensive), design (crossover vs. parallel), dose (<100g/d vs. ≥100g/d), MQS (<8 vs. ≥8), and pulse type (mixed vs. single). Data are mean differences (MD) with 95% CI. N represents the number of participants in each subgroup. Between subgroup differences were analyzed using meta-regression, with the residual I^2 reported as a percent value and significance as a P-value, with $p < 0.05$ as significant.

SUPPLEMENTARY FIGURE 4 - SBP

A. FUNNEL PLOT ASSESSING PUBLICATION BIAS



B. FUNNEL PLOT FOR TRIM-AND-FILL ANALYSIS

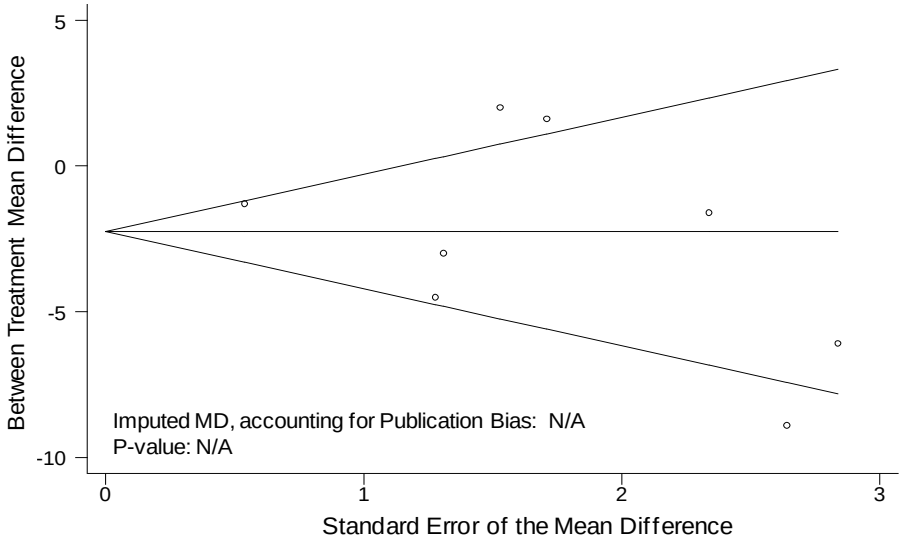
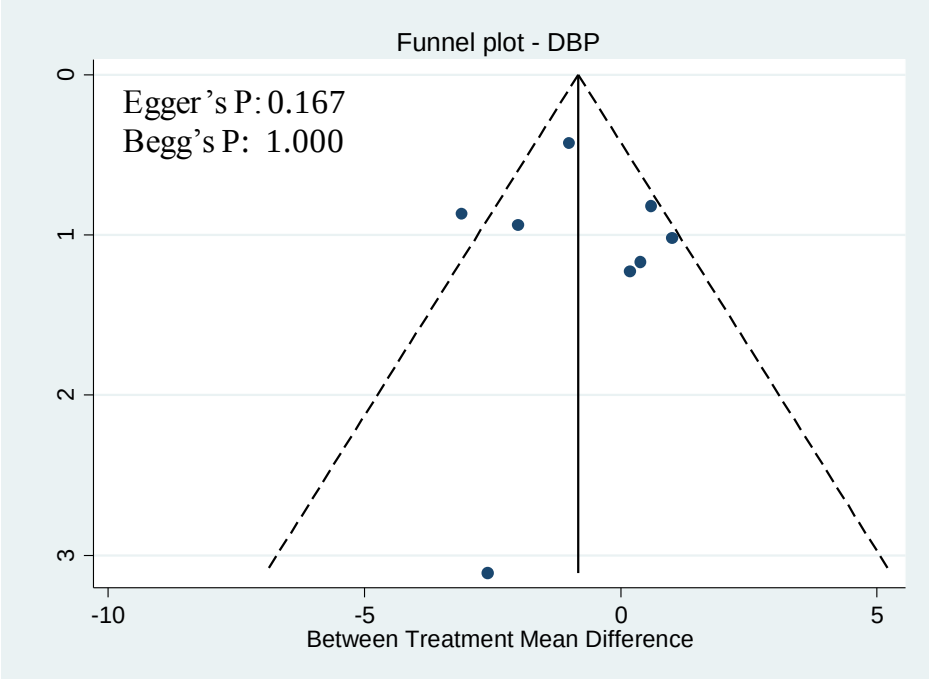


Figure S4. Funnel plots investigating publication bias and small study effects in clinical trials with isocaloric exchange of dietary pulses for other adequate comparators on systolic blood pressure (SBP). In **A**, the vertical line represent the pooled effect estimate expressed as a mean difference (MD), the dashed lines represent the pseudo-95% confidence intervals (CI) of the MD and the circles represent effect estimates for each included study. In **B**, the horizontal line represent the pooled effect estimate expressed as a MD, the diagonal lines represent the pseudo-95%CIs of the MD and the clear circles represent effect estimates for each included study. No imputed studies were identified.

SUPPLEMENTARY FIGURE 5 - DBP

A. FUNNEL PLOT ASSESSING PUBLICATION BIAS



B. FUNNEL PLOT FOR TRIM-AND-FILL ANALYSIS

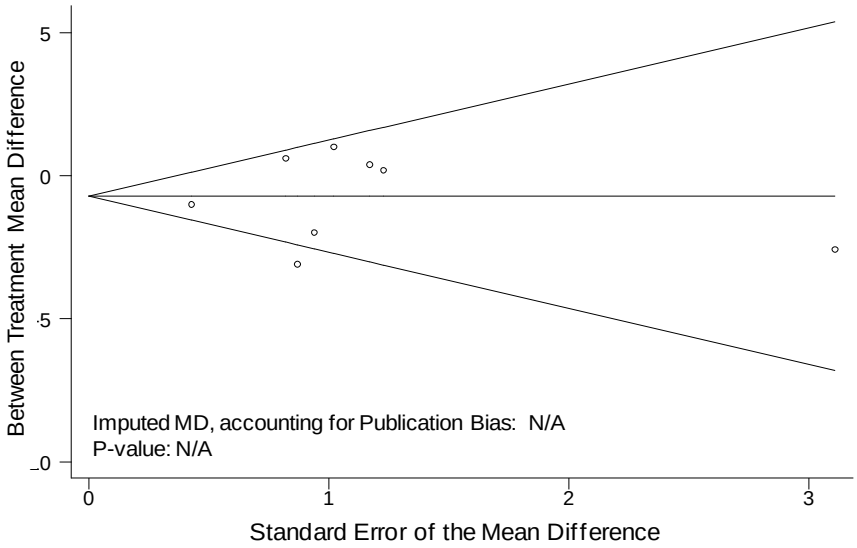
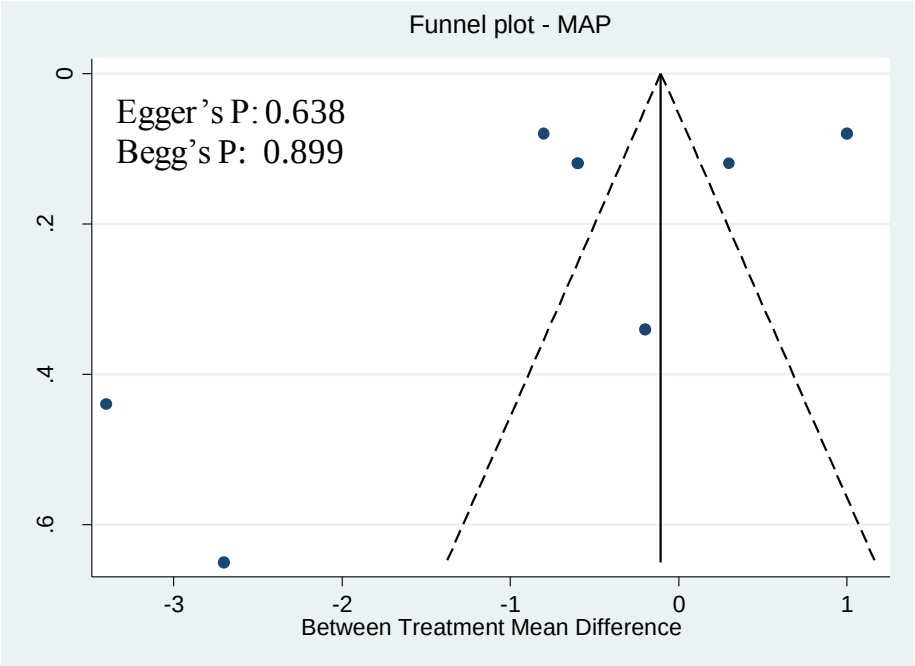


Figure S5. Funnel plots investigating publication bias and small study effects in clinical trials with isocaloric exchange of dietary pulses for other adequate comparators on diastolic blood pressure (DBP). In **A**, the vertical line represent the pooled effect estimate expressed as a mean difference (MD), the dashed lines represent the pseudo-95% confidence intervals (CI) of the MD and the circles represent effect estimates for each included study. In **B**, the horizontal line represent the pooled effect estimate expressed as a MD, the diagonal lines represent the pseudo-95%CIs of the MD and the clear circles represent effect estimates for each included study. No imputed studies were identified.

SUPPLEMENTARY FIGURE 6 - MAP

A. FUNNEL PLOT ASSESSING PUBLICATION BIAS



B. FUNNEL PLOT FOR TRIM-AND-FILL ANALYSIS

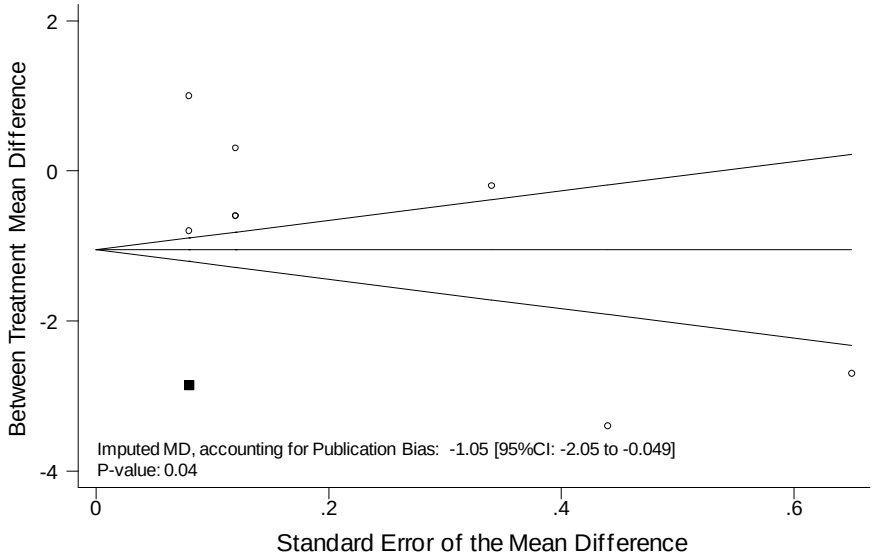


Figure S5. Funnel plots investigating publication bias and small study effects in clinical trials with isocaloric exchange of dietary pulses for other adequate comparators on Mean Arterial Pressure (MAP). In **A**, the vertical line represent the pooled effect estimate expressed as a mean difference (MD), the dashed lines represent the pseudo-95% confidence intervals (CI) of the MD and the circles represent effect estimates for each included study. In **B**, the horizontal line represent the pooled effect estimate expressed as a MD, the diagonal lines represent the pseudo-95%CIs of the MD and the clear circles represent effect estimates for each included study while back squares represent "imputed" studies.