SUPPLEMENTAL MATERIAL

Table S1. Search Strategy.

	Medline	EMBASE	Cochrane
1	(Exp diet, vegetarian/ OR vegetarian*.mp. OR vegan*.mp. OR exp vegetable proteins/ OR (vegetable* adj1 protein*).mp. OR (plant* adj1 protein*).mp. OR (plant* adj1 food*).mp. OR (plant* adj1 based).mp. OR exp Fabaceae/ OR exp soybean proteins/ OR soy*.mp. OR tofu*.mp. OR natto*.mp. OR tempeh*.mp. OR miso*.mp. OR lentil*.mp. OR bean*.mp. OR legume*.mp. OR (meat* adj1 analog*).mp.) OR lactoovo*.mp. OR lacto-ovo*.mp. OR ovolacto*.mp. OR ovo-lacto*.mp. OR lactoveg*.mp. OR lacto-veg*.mp. OR ovoveg*.mp. OR ovo-veg*.mp.	(Exp vegetarian diet/ OR exp vegetarian/ OR vegetarian*.mp. OR vegan*.mp. OR exp vegetable protein/ OR (vegetable* adj1 protein*).mp. OR (plant* adj1 protein*).mp. OR (plant* adj1 food*).mp. OR (plant* adj1 based).mp. OR exp Fabaceae/ OR soy*.mp. OR tofu*.mp. OR natto*.mp. OR tempeh*.mp. OR miso*.mp. OR lentil*.mp. OR bean*.mp. OR legume*.mp. OR (meat* adj1 analog*).mp. OR lactoovo*.mp. OR lacto-ovo*.mp. OR ovolacto*.mp. OR ovo-lacto*.mp. OR lactoveg*.mp. OR lacto-veg*.mp. OR ovoveg*.mp. OR ovo-veg*.mp.)	(Exp diet, vegetarian/ OR vegetarian*.mp. OR vegan*.mp. OR exp vegetable proteins/ OR (vegetable* adj1 protein*).mp. OR (plant* adj1 protein*).mp. OR (plant* adj1 food*).mp. OR (plant* adj1 based).mp. OR exp Fabaceae/ OR exp soybean proteins/ OR soy*.mp. OR tofu*.mp. OR natto*.mp. OR tempeh*.mp. OR miso*.mp. OR lentil*.mp. OR bean*.mp. OR legume*.mp. OR (meat* adj1 analog*).mp.) OR lactoovo*.mp. OR lacto-ovo*.mp. OR ovolacto*.mp. OR ovo-lacto*.mp. OR lactoveg*.mp. OR lacto-veg*.mp. OR ovoveg*.mp. OR ovo-veg*.mp.
	AND		
	(omnivor*.mp. OR (conventional adj3 diet*).mp. OR (normal adj3 diet*).mp. OR (regular adj3 diet*).mp. OR (mixed adj3 diet*).mp. OR exp egg proteins, dietary/ OR exp milk proteins/ OR exp meat/ OR exp eggS/ OR exp dairy products/ OR exp milk/ OR (meat* adj1 protein*).mp. OR (meat* adj1 product*).mp. OR (animal* adj1 protein*).mp. OR (animal* adj1 product*).mp. OR (fish* adj1 protein*).mp. OR (fish* adj1 product*).mp. OR (poultry adj1 protein*).mp. OR (poultry adj1 product*).mp. OR (chicken* adj1 protein*).mp. OR (chicken* adj1 product*).mp. OR (egg* adj1 protein*).mp. OR (egg* adj1 product*).mp. OR (milk adj1 protein*).mp. OR (milk adj1 product*).mp. OR (dairy adj1 protein*).mp. OR (dairy adj1 product*).mp.)	(exp omnivore/ OR omnivor*.mp. OR (conventional adj3 diet*).mp. OR (normal adj3 diet*).mp. OR (regular adj3 diet*).mp. OR (mixed adj3 diet*).mp. OR exp Meat/ OR exp egg/ OR exp dairy product/ OR (meat* adj1 protein*).mp. OR (meat* adj1 product*).mp. OR (animal* adj1 protein*).mp. OR (animal* adj1 product*).mp. OR (fish* adj1 protein*).mp. OR (fish* adj1 product*).mp. OR (poultry adj1 protein*).mp. OR (poultry adj1 product*).mp. OR (chicken* adj1 protein*).mp. OR (chicken* adj1 product*).mp. OR (egg* adj1 protein*).mp. OR (egg* adj1 product*).mp. OR (milk adj1 protein*).mp. OR (milk adj1 product*).mp. OR (dairy adj1 protein*).mp. OR (dairy adj1 product*).mp.)	(omnivor*.mp. OR (conventional adj3 diet*).mp. OR (normal adj3 diet*).mp. OR (regular adj3 diet*).mp. OR (mixed adj3 diet*).mp. OR exp egg proteins, dietary/ OR exp milk proteins/ OR exp meat/ OR exp eggS/ OR exp dairy products/ OR exp milk/ OR (meat* adj1 protein*).mp. OR (meat* adj1 product*).mp. OR (animal* adj1 protein*).mp. OR (animal* adj1 product*).mp. OR (fish* adj1 protein*).mp. OR (fish* adj1 product*).mp. OR (poultry adj1 protein*).mp. OR (poultry adj1 product*).mp. OR (chicken* adj1 protein*).mp. OR (chicken* adj1 product*).mp. OR (egg* adj1 protein*).mp. OR (egg* adj1 product*).mp. OR (milk adj1 protein*).mp. OR (milk adj1 product*).mp. OR (dairy adj1 protein*).mp. OR (dairy adj1 product*).mp.)
	AND		
	(exp lipoproteins/ OR exp cholesterol/ OR exp hyperlipidemias/ OR (lipid or lipids).mp. OR (cholesterol or cholesterols).mp. OR hdl.mp. OR ("high density lipoprotein" or "high density lipoproteins").mp. OR ldl.mp. OR ("low density lipoprotein" or "low density lipoproteins").mp. OR apolipoprotein*.mp. OR (hyperlipemia* or hyperlipaemia*).mp. OR (hyperlipidemia* or hyperlipidaemia*).mp. OR (lipidemia* or lipidaemia*).mp. OR (lipemia* or lipaemia*).mp. OR (lipemic or lipaemic).mp.)	(exp lipoproteins/ OR exp cholesterol/ OR exp hyperlipidemias/ OR (lipid or lipids).mp. OR (cholesterol or cholesterols).mp. OR hdl.mp. OR ("high density lipoprotein" or "high density lipoproteins").mp. OR ldl.mp. OR ("low density lipoprotein" or "low density lipoproteins").mp. OR apolipoprotein*.mp. OR (hyperlipemia* or hyperlipaemia*).mp. OR (hyperlipidemia* or hyperlipidaemia*).mp. OR (lipidemia* or lipidaemia*).mp. OR (lipemia* or lipaemia*).mp. OR (lipemic or lipaemic).mp.)	(exp lipoproteins/ OR exp cholesterol/ OR exp hyperlipidemias/ OR (lipid or lipids).mp. OR (cholesterol or cholesterols).mp. OR hdl.mp. OR ("high density lipoprotein" or "high density lipoproteins").mp. OR ldl.mp. OR ("low density lipoprotein" or "low density lipoproteins").mp. OR apolipoprotein*.mp. OR (hyperlipemia* or hyperlipaemia*).mp. OR (hyperlipidemia* or hyperlipidaemia*).mp. OR (lipidemia* or lipidaemia*).mp. OR (lipemia* or lipaemia*).mp. OR (lipemic or lipaemic).mp.)
2	limit 1 to animals	limit 1 to animals	1 not (exp infant formula/ OR exp milk, human/)
3	limit 2 to human	limit 2 to human	
4	2 not 3	2 not 3	
5	1 not 4	1 not 4	
6	5 not (exp infant formula/ OR exp milk, human/)	5 not (exp breast milk/ or exp infant formula/)	

For all databases, the original search date was December 6, 2016; updated search was performed on September 10, 2017.

Table S2. Full Table of Characteristics.

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Abd-Mishani et al. 2014 [1]	24 DM2 (6M,18W)	61.7 (6)	74.5 (7.1) kg	OP, Iran	C	Pulses	Meat	Whole	2 servings pulses 3d/wk	(55:30:15)	Neutral	8 wks	Agency
Abete et al. 2009 [2]**	26 O (26M)	38 (35.7)	31.8 (3) kg/m²	OP, Spain	P	Legumes	Meat, Fatty fish	Whole	Legumes 4d/wk	(53:30:17)	Negative	8 wks	Agency
Ahmed et al. 2011 [3]	27 CKD (4M,23W)	46 (12)	25.6 (4.6) kg/m²	OP, Brazil	P	Soy	Various	Protein	0.8g/kg	Nephropathy diet	Negative	8 wks	N/A
Allen et al. 2007 [4]**	191 PM (191W)	56.8 (5.6)	27.9 (4.7) kg/m²	OP, USA	P	Soy	Dairy	Protein	20g	LF	Neutral	12 wks	Agency & Industry
Appt et al. 2008 [5]	32 PM (32W)	57.7 (4.5)	24.6 (3.2) kg/m²	OP, USA	C	Soy	Dairy	Protein	52g	Habitual	Neutral	8 wks	Agency & Industry
Ashton et al. 2000 [6]	42 N (42M)	45.8 (7.8)	26.2 (3.3) kg/m²	OP, Australia	C	Soy	Lean meat	Whole	290g tofu	Plant-based diet (44:32:17)	Neutral	4 wks	N/A
Azadbakht et al. 2003 [7]	14 DM2,CKD (10M,4W)	62.5 (12.1)	26.6 (4) kg/m²	OP, Iran	C	Soy	Various	Protein	35%	Nephropathy diet	Neutral	7 wks	Agency
Azadbakht et al. 2007 [8]	42 MS,PM (42W)	PM	N/A	OP, Iran	C	Soy	Red meat	Whole & protein	11-15g	DASH	Neutral	8 wks	Agency
Azadbakht et al. 2008 [9]	41 DM2,CKD (18M,23W)	62 (12)	N/A	OP, Iran	P	Soy	Various	Protein	35%	Nephropathy diet	Neutral	4 y	N/A
Bahr et al. 2013 [10]	33 HC (15M,18W)	49.5 (13.4)	28 (5.9) kg/m²	OP, Germany	C	Lupin	Dairy	Protein	20g	Habitual	Neutral	8 wks	Agency & Industry
Bahr et al. 2014 [11]	68 HC (28M,40W)	56.9 (10.7)	26.5 (2.7) kg/m²	OP, Germany	C	Lupin	Dairy	Protein	20g	Habitual	Neutral	4 wks	Agency & Industry
Bakhit et al. 1994 [12] (Cotyledon)	21 HC (21M)	43 (14)	27.1 (3) kg/m²	OP, USA	C	Soy	Dairy	Protein	25g	LF, LC (55:30:15)	Neutral	4 wks	Industry
Bakhit et al. 1994 [12] (Cellulose)	21 HC (21M)	43 (14)	27.1 (3) kg/m²	OP, USA	C	Soy	Dairy	Protein	25g	LF, LC (55:30:15)	Neutral	4 wks	Industry
Basaria et al. 2009 [13]	84 PM (84W)	55.7 (10.8)	26 (5.2) kg/m²	OP, USA	P	Soy	Dairy	Protein	20g	Habitual	Neutral	12 wks	N/A
Baum et al. 1998 [14]	66 PM (66W)	60.9 (8)	28.2 (5.3) kg/m²	OP, USA	P	Soy	Dairy	Protein	40g	NCEP Step 1	Neutral	24 wks	Agency & Industry

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Beavers et al. 2010 [15]	32 N,PM (32W)	54.4 (3.3)	25.8 (3.8) kg/m²	OP, USA	P	Soy	Dairy	Whole	18g	Habitual	Neutral	4 wks	Industry
Blum et al. 2003 [16]	24 HC,PM (24W)	55 (5)	N/A	OP, Israel	C	Soy	Dairy	Protein	25g	Habitual	Neutral	6 wks	Industry
Borodin et al. 2009 [17]	28 HC,O (9M,19W)	50 (10.6)	29 (3.9) kg/m²	OP, Russia	C	Soy	Dairy	Protein	30g	Habitual	Neutral	2 mos	Industry
Bricarello et al. 2004 [18]	60 HC (15M,45W)	56 (7.7)	24.9 (2.3) kg/m²	OP, Brazil	C	Soy	Dairy	Whole	25g	NCEP TLC	Neutral	6 wks	Agency & Industry
Burns-Whitmore et al. 2014 [19]	20 N (4M,16W)	38 (3)	23 (4.5) kg/m²	OP, USA	C	Walnut	Egg (Standard, N3 FA)	Whole	28g walnut 6x/wk	Habitual	Neutral	8 wks	Agency & Industry
Campbell et al. 2010 [20]	62 HC,PM (62W)	54.3 (33.2)	28 (5.2) kg/m²	OP, USA	P	Soy	Dairy	Protein	25g	Habitual	Neutral	1 y	Agency & Industry
Chen et al. 2005 (HC) [21]	19 HC,CKD (5M,14W)	63.6 (9.4)	24 (2.1) kg/m²	OP, Taiwan	P	Soy	Dairy	Protein	30g	Hemodialysis diet	Neutral	12 wks	Agency & Industry
Chen et al. 2005 (N) [21]	18 CKD (5M,13W)	59.5 (11.9)	21.3 (5) kg/m²	OP, Taiwan	P	Soy	Dairy	Protein	30g	Hemodialysis diet	Neutral	12 wks	Agency & Industry
Chen et al. 2006 [22]	26 HC,CKD (19M,7W)	58.6 (11.4)	23.1 (2.7) kg/m²	OP, Taiwan	P	Soy	Dairy	Protein	30g	Hemodialysis diet	Neutral	12 wks	Agency
Crouse et al. 1999 [23]**	146 HC (94M,62W)	52 (11)	26 (3) kg/m²	OP, USA	P	Soy	Dairy	Protein	25g	NCEP Step 1	Neutral	9 wks	Agency & Industry
Cuevas et al. 2003 [24]	18 HC,PM (18W)	59 (47-70)	29.3 (3.4) kg/m²	OP, Chile	C	Soy	Dairy	Protein	40g	NCEP Step 1	N/A	4 wks	Agency & Industry
Dent et al. 2001 [25]	69 PeriM (69W)	50.2 (3.6)	24.1 (3.2) kg/m²	OP, USA	P	Soy	Dairy	Protein	40g	Habitual	Neutral	24 wks	Agency & Industry
Duane et al. 1999 [26]	8 N (8M)	60.3 (11.9)	26.3 (4) kg/m²	IP, USA	C	Soy	Various	Whole	>75%	American diet	Neutral	6-7 wks	Agency
Dunn et al. 1986 [27]	12 N (12M)	31.8 (6.4)	24.9 (4.6) kg/m²	OP, USA	C	Soy	Dairy	Whole	26.7g	Habitual	Neutral	3 wks	N/A
Finley et al. 2007 (N) [28]	40 N (20M,20W)	37.4 (10.1)	24.5 (2.8) kg/m²	OP, USA	P	Pinto beans	Chicken noodle soup	Whole	130g pinto beans	Habitual	Neutral	12 wks	Agency
Finley et al. 2007 (Pre-MS) [28]	40 Pre-MS (20M,20W)	42.4 (9.9)	32.8 (3.8) kg/m²	OP, USA	P	Pinto beans	Chicken noodle soup	Whole	130g pinto beans	Habitual	Neutral	12 wks	Agency

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Gardner et al. 2001[29]	94 HC,PM (94W)	59.1 (6.9)	26.3 (4.4) kg/m²	OP, USA	P	Soy	Dairy	Protein	42g	Habitual	Neutral	12 wks	Agency & Industry
Gardner et al. 2007 [30]	28 HC (6M,22W)	52 (9)	26 (4) kg/m²	OP, USA	C	Soy	Dairy	Whole & protein	25g	Habitual	Positive	4 wks	Agency & Industry
Giovannetti et al. 1986 [31] (N)	12 N (12W)	22.1 (2.1)	59.5 (8) kg	OP, Canada	C	Soy	Dairy	Protein	88%	(44:38:18)	Neutral	4 wks	Agency & Industry
Giovannetti et al. 1986 [31] (LF)	12 N (12W)	22.1 (2.1)	59.5 (8) kg	OP, Canada	C	Soy	Dairy & meat	Protein	88%	(59:23:18)	Neutral	4 wks	Agency & Industry
Goldberg et al. 1982 [32] (N)	4 N (3M,1W)	36.8 (16.1)	N/A	OP, USA	C	Soy	Dairy & meat	Protein	75%	(40:40:20)	Neutral	6 wks	Agency & Industry
Goldberg et al. 1982 [32] (HC)	12 HC (7M,5W)	43.6 (12.2)	N/A	OP, USA	C	Soy	Dairy & meat	Protein	75%	(40:40:20)	Neutral	6 wks	Agency & Industry
Greany et al. 2004 [33]	37 PM (37W)	57.5 (13.4)	25.4 (6.7) kg/m²	OP, USA	C	Soy	Dairy	Protein	0.4g/kg	Habitual	Neutral	6 wks	Agency & Industry
Haub et al. 2005 [34]	21 N (21M)	65 (5)	28.2 (2.6) kg/m²	OP, USA	P	Soy	Beef products	Whole	0.6g/kg	Plant-based diet	Neutral	12 wks	Agency & Industry
Hermansen et al. 2001 [35]	20 DM2 (14M,6W)	63.6 (7.5)	30.2 (4.1) kg/m²	OP, Denmark	C	Soy	Dairy	Protein	50g	(~42:29:26)	Neutral	6 wks	Agency & Industry
Hill et al. 2015 [36]††	62 O,MS (28M,34W)	45.8 (21.4)	34.8 (3.7) kg/m²	OP, USA	P	Lean beef	Various	Whole	67%	DASH or (45:27:27)	Neutral 5 wk, Negative 18 wk	6 mos	Agency & Industry
Hoie et al. 2005 [37]- A double-blind placebo-controlled….	116 HC (54M,62W)	55.2 (9.5)	76.9 (12.4) kg	OP, Germany	P	Soy	Dairy	Protein	25g	Habitual	Neutral	8 wks	N/A
Høie et al. 2005 [38]- Lipid Lowering…	117 HC (63M,54W)	53.6 (9.6)	76.3 (12.5) kg	OP, Germany	P	Soy	Dairy	Protein	15g, 25g	Habitual	Neutral	8 wks	N/A
Hoie et al. 2007 [39]	88 HC (34M,54W)	54.6 (9.6)	75.2 (12.5) kg	OP, Germany	P	Soy	Dairy	Protein	25g	Habitual	Neutral	8 wks	Industry
Hosseinpour-Niazi et al. 2014 [40]	31 DM2 (7M,24W)	58.1 (33.4)	27.8 (3.3) kg/m²	OP, Iran	C	Non-soy legumes	Meat	Whole	2 servings legumes 3x/wk	NCEP TLC	Neutral	8 wks	Agency

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Huff et al. 1984 [41]	5 HC (5M)	49 (11.2)	82 (15.7) kg	OP, Canada	C	Soy	Various	Whole	41g	(49:37:15)	Negative	6 wks	Agency
Jenkins et al. 1989 [42]	11 O (11W)	38 (13.3)	32.8 (4.1) kg/m²	OP, Canada	C	Soy	Various	Protein	17.4g	1000kcal diet	Negative	4 wks	Agency & Industry
Jenkins et al. 2002 [43]	41 HC,PM (23M,18W)	62 (12.8)	25.3 (3.2) kg/m²	OP, Canada	C	Soy	Dairy	Whole & protein	50-52g	NCEP Step 2	Neutral	4 wks	Agency & Industry
Jenkins et al. 2010 [44]	23 HC,PM (7M,16W)	57 (9.6)	26 (4.8) kg/m²	OP, Canada	C	Barley	Dairy	Whole	30g/2000kcal	LF, LC, plant-based diet	Neutral	4 wks	Agency & Industry
Kestin et al. 1989 [45]	26 N (26M)	44 (10)	25.5 (3.2)	OP, Australia	P §§	Various	Meat	Whole	60%	Plant-based diet	Neutral	6 wks	Agency & Industry
Kjolbaek et al. 2017 [46]	113 O (60M:91F)	42.4	33.1	OP, Denmark	P	Soy	Dairy	Protein	45g	Habitual	Neutral	24 wks	Agency & Industry
Kreijkamp-Kaspers et al. 2004 [47]	175 PM (175W)	66.6 (4.7)	26.2 (3.8) kg/m²	OP, Netherlands	P	Soy	Dairy	Protein	25.6g	Habitual	Neutral	1 y	Agency & Industry
Kurowska et al. 1997 [48]	34 HC (17M,17W)	55 (11)	N/A	OP, Canada	C	Soy	Dairy	Whole	31g	Habitual	Neutral	4 wks	Industry
Laidlaw et al. 1985 [49]	19 HC (19M)	47.4 (11.3)	81.5 (11.7) kg	OP, Canada	C	Soy	Dairy	Protein	18.4g	Habitual	Neutral	8 wks	Agency & Industry
Laurin et al. 1991 [50]**	9 FHC (6M,4W)	8 (3)	16.7 (2.6) kg/m²	OP, Canada	C	Soy	Dairy	Protein	35%	LC (52:28:20)	Neutral	4 wks	Agency
Li et al. 2016 [51]	34 O (11M:23F)	53.5 (3.2)	30.9 (0.7) kg/m²	OP, USA	P	Legumes	Meat	Whole	30%	(55:25:20)	Negative	12 wks	Agency & Industry
Liao et al. 2007 [52]	30 O (6M,24W)	33.4 (10.8)	29.8 (3.4) kg/m²	OP, Taiwan	P	Soy	Various	Whole	30g	(60:25:15)	Negative	8 wks	Industry
Lichenstein et al. 2002 [53] (No IF)	42 HC (18M,24W)	62.7 (8.8)	26.6 (3.4) kg/m²	OP, USA	C	Soy	Dairy & meat	Protein	50g/2000kcal	(46.5:37:16)	Neutral	6 wks	Agency & Industry
Lichenstein et al. 2002 [53] (IF)	42 HC (18M,24W)	62.7 (8.8)	26.6 (3.4) kg/m²	OP, USA	C	Soy	Dairy & meat	Protein	50g/2000kcal	(46.5:37:16)	Neutral	6 wks	Agency & Industry
Liu et al. 2012 [54]	180 Pre-DM2,PM (180W)	56.2 (4.4)	24.4 (3.7) kg/m²	OP, China	P	Soy	Dairy	Protein	15g	Habitual	Neutral	6 mos	Agency & Industry

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Liu et al. 2014 [55]	270 PM (270W)	57.9 (5.1)	N/A	OP, China	P	Soy	Dairy	Whole	12.8g	Habitual	Neutral	6 mos	Agency
Lovati et al. 1987 [56]	12 HC (5M,7W)	45 (12.5)	61.4 (1.7) kg	OP, Italy	C	Soy	Dairy & meat	Protein	N/A	LF (54:26:20)	Neutral	4 wks	Agency & Industry
Ma et al. 2005 [57]	159 HC (70M,89W)	56.6 (8.4)	28.9 (4.3) kg/m²	OP, USA	P	Soy	Dairy	Protein	31.5g	Habitual	Neutral	5 wks	Industry
Ma et al. 2011 [58]	90 HC (26M,64W)	51.7 (10.6)	23.6 (3.3) kg/m²	OP, China	P	Soy	Dairy	Protein	18g	Habitual	Neutral	8 wks	Industry
Maki et al. 2010 [59]	58 HC (26M,32W)	50.8 (12)	27.7 (4.8) kg/m²	OP, USA	P	Soy	Dairy	Protein	25g	NCEP TLC	Neutral	4 wks	Industry
Markova et al. 2015 [60]‡‡	37 DM2 (24M,13W)	64.3 (6.1)	30.5 (3.6) kg/m²	OP, Germany	P	Pulses	Dairy & meat	Whole	>65-70%	(40:30:30)	Neutral	6 wks	N/A
Matthan et al. 2007 [61]	28 HC (2M,26W)	65 (6)	27 (3) kg/m²	OP, USA	C	Soy	Various	Whole	37.5g	NCEP TLC	Neutral	6 wks	Agency
McVeigh et al. 2006 [62]	35 N (35M)	27.9 (5.7)	25.4 (3) kg/m²	OP, Canada	C	Soy	Dairy	Protein	32g	Habitual	Neutral	57 d	Agency & Industry
Mercer et al. 1987 [63]	33 N (23M,10W)	46.7 (10.8)	N/A	OP, Canada	C	Soy	Dairy	Protein	19g	Habitual	Neutral	6 wks	Agency
Meredith et al. 1989 [64]	10 N (10W)	27.3 (6.3)	22.5 (2.6) kg/m²	OP, USA	C	Soy	Dairy	Whole	22g	Plant-based diet	Neutral	3 wks	Agency
Meyer et al. 2004 [65]	23 HC and/or HTN (13M,10W)	54 (8.6)	26.2 (2.9) kg/m²	OP, Australia	C	Soy	Dairy	Whole	>30g	Habitual	Neutral	5 wks	Agency & Industry
Miraghajani et al. 2013 [66]	25 DM2,CKD (10M,15W)	51 (10)	28 (4) kg/m²	OP, Iran	C	Soy	Dairy	Whole	2.5g	Nephropathy diet	Neutral	4 wks	Agency
Napora et al. 2011 [67]	33 ADT (33M)	69.1 (9.3)	29.4 (5.3) kg/m²	IP, USA	P	Soy	Dairy	Protein	20g	Habitual	Neutral	12 wks	N/A
Onning et al. 1998 [68]	22 N (11M,11W)	31.5 (23-54)	(20-25)) kg/m²	OP, Sweden	P	Soy	Dairy	Whole	22.5g-30g	Habitual	Neutral	4 wks	Agency
Padhi et al. 2015 [69]	213 HC (78M,135W)	55 (8.8)	28 (4.6) kg/m²	OP, Canada	P	Soy	Dairy	Whole	12.5g, 25g	Habitual	Neutral	6 wks	Agency & Industry

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Pipe et al. 2009 [70]**	29 DM2,PM (16M,13W)	60.1 (9.6)	29.6 (4.1) kg/m²	OP, Canada	C	Soy	Dairy	Protein	40g	Habitual	Neutral	57 d	Agency & Industry
Potter et al. 1993 [71]	25 HC (25M)	61 (48-78)	30.2 (6.7) kg/m²	IP, USA	C	Soy	Dairy	Protein	50g	(55:<30:15)	Neutral	4 wks	Industry
Puska et al. 2002 [72]	52 HC (31M,21W)	55.8 (35-70)	N/A	OP, Finland	P	Soy	Dairy	Protein	52g	Habitual	Neutral	6 wks	Industry
Puska et al. 2004 [73]**	132 HC (77M,66W)	Median 58 (30-70)	27 (9.1) kg/m²	OP, Finland	P	Soy	Dairy	Protein	41.4g	Habitual	Neutral	8 wks	Agency & Industry
Roughead et al. 2005 [74]	13 PM (13W)	59.9 (5)	26 kg/m²	OP, USA	C	Soy	Meat	Protein	25g	(55:30:15)	Neutral	7 wks	Agency & Industry
Santo et al. 2008 [75]	30 N (30M)	24.2 (2.3)	23.8 (3.7) kg/m²	OP, USA	P	Soy	Dairy	Protein	25g	Habitual	N/A	4 wks	Industry
Shidfar et al. 2009 [76]	42 HC,PM (42W)	55 (4.8)	27 (3.1) kg/m²	OP, Iran	P	Soy	Dairy	Whole	50g	Habitual	Neutral	10 wks	N/A
Shige et al. 1998 [77]	11 N (11M)	32.6 (6.4)	24.6 (2.8) kg/m²	OP, Japan	C	Soy	Dairy	Protein	20g	Japanese diet	Neutral	3 wks	Industry
Sirtori et al. 1977 [78]	20 HC (10M,10W)	(22-68)	N/A	IP, Italy	C	Soy	Various	Protein	55%	LF, LC, HPUFA	N/A	3 wks	Agency & Industry
Sirtori et al. 1999 [79]	21 HC (8M,13W)	51.9 (13.5)	24.4 (3.6) kg/m²	OP, Italy	C	Soy	Dairy	Whole	35g	LC, HPUFA	Neutral	4 wks	Agency
Sirtori et al. 2002 [80]	20 FHC (4M,16W)	59.5 (8.4)	24.2 (3.5) kg/m²	OP, Italy	C	Soy	Dairy	Whole	25g	LC, HPUFA	Neutral	4 wks	Agency & Industry
Steele et al. 1992 [81]	32 N (15M,17W)	42.2 (16.2)	N/A	OP, Australia	C	Soy	Dairy	Whole	>16.5g	Habitual	Neutral	4 wks	Agency
Steinberg et al. 2003 [82]	28 PM (28W)	54.9 (5.3)	24.6 (3.2) kg/m²	OP, USA	C	Soy	Dairy	Protein	25g	Habitual	Neutral	6 wks	Industry
Sucher et al. 2017 [83]	37 DM2 (24M:13F)	64.3 (6.3)	30.2 (3.9) kg/m²	OP, Germany	P	Pea	Dairy & meat	Whole	72%	(40:30:30)	Neutral	6 wks	Agency & Industry
Tabibi et al. 2010 [84]	36 CKD (18M,18W)	52 (15)	26 (5) kg/m²	OP, Iran	P	Soy	Meat	Whole	14g	Habitual	Neutral	8 wks	Agency
Takahira et al. 2011 [85]	46 O (11M,35W)	55.5 (12.4)	29.2 (4) kg/m²	OP, Japan	P	Soy	Dairy	Protein	12g	Habitual	Neutral	20 wks	Agency

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Teede et al. 2001 [86]	179 N,PM (96M,83W)	60.5 (9.6)	25.5 (2.6) kg/m²	OP, Australia	P	Soy	Dairy	Protein	40g	Habitual	Neutral	3 mos	Agency
Teixeira et al. 2000 [87]	81 HC (81M)	45.4 (11.4)	27.4 (3.7) kg/m²	OP, USA	P	Soy	Dairy	Protein	20g, 30g, 40g, 50g	NCEP Step 1	Neutral	6 wks	Agency & Industry
Teixeira et al. 2004 [88]	14 DM2,CKD (14M)	(53-73)	29.8 (3) kg/m²	OP, USA	C	Soy	Dairy	Protein	0.5g/kg	1g protein/kg, LF, LC	Neutral	8 wks	Agency & Industry
Thorp et al. 2008 [89]	91 HC (34M,57W)	52.7 (1)	27.3 (4.5) kg/m²	OP, Australia	C	Soy	Dairy	Protein	12g, 24g	Habitual	Neutral	6 wks	Agency & Industry
Tonstad et al. 2002 [90]	130 HC,PM (108M,22W)	52.5 (8.4)	25.3 (2.1) kg/m²	OP, Norway	P	Soy	Dairy	Protein	30g, 50g	AHA Step 1	Neutral	16 wks	Industry
Van Horn et al. 2001 [91] (Oats)	64 HC,PM (64W)	66.6 (10.3)	26.9 (3.8) kg/m²	OP, USA	P	Soy	Dairy	Protein	29g	NCEP Step 1	Neutral	6 wks	Industry
Van Horn et al. 2001 [91] (Wheat)	63 HC,PM (63W)	66.6 (10.3)	26.9 (3.8) kg/m²	OP, USA	P	Soy	Dairy	Protein	29g	NCEP Step 1	Neutral	6 wks	Industry
van Nielen et al. 2014 [92]	15 O,PM (15W)	61 (5)	Waist circumference: 90 (10) cm	OP, Netherlands	C	Soy	Dairy & meat	Whole	30g	(49:21:30)	Neutral	4 wks	Industry
van Raaij et al. 1981 [93]**	69 N (46M,30W)	(18-28)	N/A	OP, Netherlands	P	Soy	Dairy	Protein	65%	Western diet	Neutral	4 wks	Agency & Industry
van Raaij et al. 1982 [94]**	57 N (32M,29W)	46 (9)	N/A	OP, Netherlands	P	Soy	Dairy	Protein	60%	Western diet	Negative	4 wks	Agency & Industry
Vega-Lopez et al. 2010 [95]	30 HC (9M,21W)	61.8 (6.5)	26.7 (3.2) kg/m²	OP, USA	C	Various (Low Lys:Arg)	Various (High Lys:Arg)	Whole	>75%	(50:30:20)	Neutral	5 wks	Agency
Vigna et al. 2000 [96]	77 PM (77W)	53.4 (3.3)	25.9 (3.5) kg/m²	OP, Italy	P	Soy	Dairy	Protein	40g	Habitual	Neutral	12 wks	Industry
Weisse et al. 2010 [97]	43 HC (20M,23W)	43.9 (11.8)	25.9 (4.5) kg/m²	OP, Germany	P	Lupin	Dairy	Protein	35g	Habitual	Neutral	6 wks	Agency
West et al. 2005 [98]	32 HC,PM (14M,18W)	58 (5.2)	26.3 (3.1) kg/m²	OP, USA	C	Soy	Dairy	Protein	25g	NCEP Step 1, HF	N/A	6 wks	Industry

Table S2. Full Table of Characteristics (Continued).

Study, year	Participants	Mean Age (SD or range), y *	Mean BMI or Body Weight (SD) †	Setting	Design	Plant Protein Source	Animal Protein Source ‡	Food Form §	Amount of substitution ‖	Background Diet ¶	Energy Balance	Follow-up	Funding #
Wheeler et al. 2002 [99]	17 DM2,CKD (14M,3W)	56 (12.4)	33.1 (5.8) kg/m²	OP, USA	C	Legumes	Dairy & meat	Whole	60%	(53:30:17)	Neutral	6 wks	Agency & Industry
Wiebe et al. 1984 [100]	8 N (8M)	21 (3.2)	N/A	OP, Canada	C	Various	Dairy	Whole	55%	Western diet	Neutral	3 wks	Agency
Wofford et al. 2012 [101]**	352 N (205M,147 W)	47.7 (10.4)	29.3 (4.5) kg/m²	OP, USA	C	Soy	Dairy	Protein	40g	Habitual	Neutral	8 wks	Agency & Industry
Wolfe et al. 1981 [102]	7 HC (7M)	41.9 (10.8)	76 (13.2) kg	OP, Canada	C	Soy	Dairy & meat	Protein	47g	Habitual, LC	Neutral	7 wks	Agency & Industry
Wolfe et al. 1985 [103]	5 HC (2M,3W)	56 (8.9)	84 (13.4) kg	OP, Canada	C	Soy	Dairy & meat	Protein	72g	Habitual, LC	Neutral	5 wks	Agency & Industry
Wong et al. 1998 [104] (N)	13 N (13M)	35.5 (7.2)	N/A	OP, USA	C	Soy	Dairy & meat	Protein	>75%	NCEP Step 1	Neutral	5 wks	Agency & Industry
Wong et al. 1998 [104] (HC)	13 HC (13M)	41.4 (7.8)	N/A	OP, USA	C	Soy	Dairy & meat	Protein	>75%	NCEP Step 1	Neutral	5 wks	Agency & Industry

ADT = androgen deprivation therapy, C = crossover, CKD = chronic kidney disease, DM2 = diabetes mellitus, FHC = familial hypercholesterolemia, HC = hypercholesterolemic, HF = high fibre, HPUFA = high polyunsaturated fat:saturated fat ratio, HTN = hypertension, IF = isoflavones, IP = inpatient, LC = low cholesterol, LF = low fat, LOV = lacto-ovo-vegetarian, N = normal, N/A = data not available, NP = not published, M = men, MS = metabolic syndrome, O = overweight/obese, OP = outpatient, P = parallel, PM = post-menopausal, Peri-M = peri-menopausal, W = women

* Mean age and SD or range were used as available; where unavailable, post-menopausal (PM) was used for Azadbakht et al. 2007[8], and median age and range were used for Puksa et al. 2004[73].

† Baseline BMI values (kg/m2). Baseline body weight (kg) values are only reported when no data on body weight were available. Waist circumference (cm) was used for the study by van Nielen et al. 2014[92] as neither were available.

‡ Animal protein source. Multiple animal protein intervention arms within the same trial are separated by a comma.

§ Food form indicates whether test foods were in the form of whole foods (whole) and/or isolated protein supplements (protein).

‖ Amount of protein substitution, per day unless otherwise indicated. Where data for grams of substitution was unavailable, grams/2000kcal, percentage protein replacement, grams per kilogram body weight, or serving sizes were used as available. Studies describing replacement of "most" protein are displayed as >75%. Multiple dosage levels within the same trial are separated by a comma.

¶ Background diet as described by study protocol. Where specific diets were not indicated, dietary breakdowns are listed as energy from (carbohydrate:fat:protein) where given, and where no information was given habitual diets were assumed. NCEP Step 1 diet has <30% fat, <1/3 saturated fat, and <300mg cholesterol. NCEP Step 2 diet has <30% fat, <1/4 saturated fat, and <200mg cholesterol. Nephropathy diet contains 0.8g protein/kg body weight. Hemodialysis diet contains 35%F, 1.2g protein/kg body weight, and 32-35kcal/kg body weight. Plant-based diet includes vegetarian, lacto-vegetarian, and lacto-ovo-vegetarian.

Agency funding consists of funding from government, university, or not-for-profit health agency sources. The following studies had declared conflicts of interest: Gardner et al 2007[30], Haub et al 2005[34], Hermansen et al 2001[35], Jenkins et al 2010[44], Maki et al 2010[59], Mercer et al 1987[63], Padhi et al 2015[69], Tonstad et al 2002[90], and West et al 2005[98]. None of the other studies declared any conflicts of interest.

** Includes baseline data before drop-outs where final data were not available for study characteristics

†† For Hill et al. 2015[36], the background diet followed the DASH diet except for one arm of the animal protein arm which had increased protein content

‡‡ The data from Markova et al. 2015 [60] are not yet published; BMI data from this study describe the first 30 patients enrolled

§§ Kestin et al. 1989 [45] used an incomplete crossover design with three arms

Table S3. Bootstrap Analyses.

LDL-C
Total (95% CI): -0.16 [-0.20, -0.12] Heterogeneity: $Chi^2 = 235.60$, df = 107 ($P < 0.0001$); $I^2 = 55\%$ Test for overall effect: Z = -8.597 ($P < 0.0001$) Modified $H^2 = 1.218$ $tau^2 = 0.0160$
non-HDL-C
Total (95% CI): -0.18 [-0.22, -0.14] Heterogeneity: $Chi^2 = 209.96$, df = 101 ($P < 0.0005$); $I^2 = 51\%$ Test for overall effect: Z = -8.463 ($P < 0.0005$) Modified $H^2 = 1.035$ $tau^2 = 0.0164$
ApoB
Total (95% CI): -0.05 [-0.06, -0.03] Heterogeneity: $Chi^2 = 51.36$, df = 36 ($P = 0.05$); $I^2 = 30\%$ Test for overall effect: Z = -6.587 ($P < 0.0005$) Modified $H^2 = 0.449$ $tau^2 = 0.0004$

Data are expressed in mmol/L for LDL-C and non-HDL-C, and g/L for ApoB. Paired analyses were applied to all crossover trials. Data are expressed as MDs with 95% CIs, using generic inverse-variance random-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of $P<0.10$.

Table S4. Post-Hoc Dose Response.

LDL				
Dose threshold, grams AP replaced with PP	**Dose ranges, grams AP replaced with PP**	**β (95% CIs) ***	**Residual I2 †**	**p-value**
15	≤15	0.003 (-0.020, 0.026)	57.58%	0.704
	>15	-0.002 (-0.004, 0.001)		
25	≤25	0.001 (-0.008, 0.011)	57.57%	0.535
	>25	-0.002 (-0.005, 0.001)		
35	≤35	-0.001 (-0.007, 0.005)	57.59%	0.846
	>35	-0.002 (-0.006, 0.002)		
45	≤45	-0.002 (-0.006, 0.002)	57.47%	0.744
	>45	-0.001 (-0.006, 0.005)		
55	≤55	-0.002 (-0.005, 0.001)	57.03%	0.512
	>55	0.001 (-0.007, 0.009)		
Non-HDL				
Dose threshold, grams AP replaced with PP	**Dose ranges, grams AP replaced with PP**	**β (95% CIs) ***	**Residual I2 †**	**p-value**
15	≤15	0.006 (-0.018, 0.029)	44.61%	0.685
	>15	0.001 (-0.002, 0.003)		
25	≤25	0.002 (-0.007, 0.010)	42.15%	0.839
	>25	0.001 (-0.002, 0.003)		
35	≤35	-0.001 (-0.007, 0.005)	44.29%	0.462
	>35	0.002 (-0.002, 0.006)		
45	≤45	-0.002 (-0.006, 0.002)	45.25%	0.112
	>45	0.005 (-0.001, 0.010)		
55	≤55	-0.001 (-0.004, 0.002)	45.16%	0.076
	>55	0.007 (0, 0.015)		
Apo B				
Dose threshold, grams AP replaced with PP	**Dose ranges, grams AP replaced with PP**	**β (95% CIs) ***	**Residual I2 †**	**p-value**
15	≤15	0.001 (-0.006, 0.008)	37.42%	0.836
	>15	0 (-0.001, 0.001)		
25	≤25	0 (-0.003, 0.003)	37.42%	0.922
	>25	0 (-0.001, 0.001)		
35	≤35	0 (-0.002, 0.002)	37.42%	0.899
	>35	0 (-0.001, 0.001)		
45	≤45	0 (-0.002, 0.001)	36.88%	0.615
	>45	0.001 (-0.001, 0.002)		
55	≤55	0 (-0.001, 0.001)	36.11%	0.519
	>55	0.001 (-0.002, 0.003)		

AP = animal protein; PP = plant protein

* β is the slope derived from the piecewise linear meta-regression analyses and represents the treatment effect on LDL-C for doses above and below each dose-threshold representing grams animal protein replaced with plant protein

† The residual I^2 value indicates heterogeneity unexplained by each dose-threshold.

Table S4. GRADE Assessment.

Quality assessment							№ of patients		Effect	Quality
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Plant protein**	**Animal protein**	**Absolute (95% CI)**	
Effects of vegetable protein compared to animal protein intake on LDL-C										
108	randomised trials	not serious	serious [1]	not serious	not serious	potential publication bias [2]	3637	3764	MD **0.16 mmol/L lower** (0.2 lower to 0.12 lower)	⊕⊕⊕⊖ MODERATE due to inconsistency
Effects of vegetable protein compared to animal protein intake on non-HDL-C										
102	randomised trials	not serious	serious [1]	not serious	not serious	none	3502	3643	MD **0.18 mmol/L lower** (0.22 lower to 0.14 lower)	⊕⊕⊕⊖ MODERATE due to inconsistency
Effects of vegetable protein compared to animal protein intake on apo B										
37	randomised trials	not serious	not serious	not serious	serious [3]	none	937	1083	MD **0.05 g/L lower** (0.06 lower to 0.03 lower)	⊕⊕⊕⊖ MODERATE due to imprecision

CI: Confidence interval; MD: Mean difference

1. Significant (P<0.05) and substantial (I-squared>50%) heterogeneity
2. Egger's test for publication bias was significant (P<0.05). However, significance is dependent upon one study with missing variance data, and additional Duval and Tweedie trim-and-fill analyses did not substantially alter the effect size or significance. Therefore there was no further downgrading.
3. 95% CI for risk estimates overlap a minimally important difference of 0.04g/L for apolipoprotein B

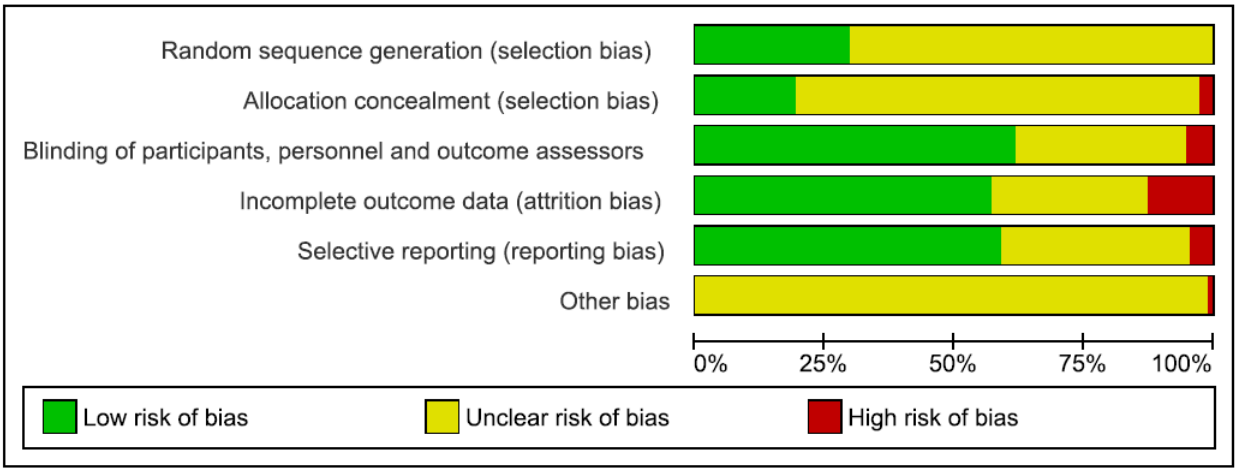

Figure S1. Cochrane Risk of Bias. Risk of bias assessment using Cochrane Risk of Bias Tool.

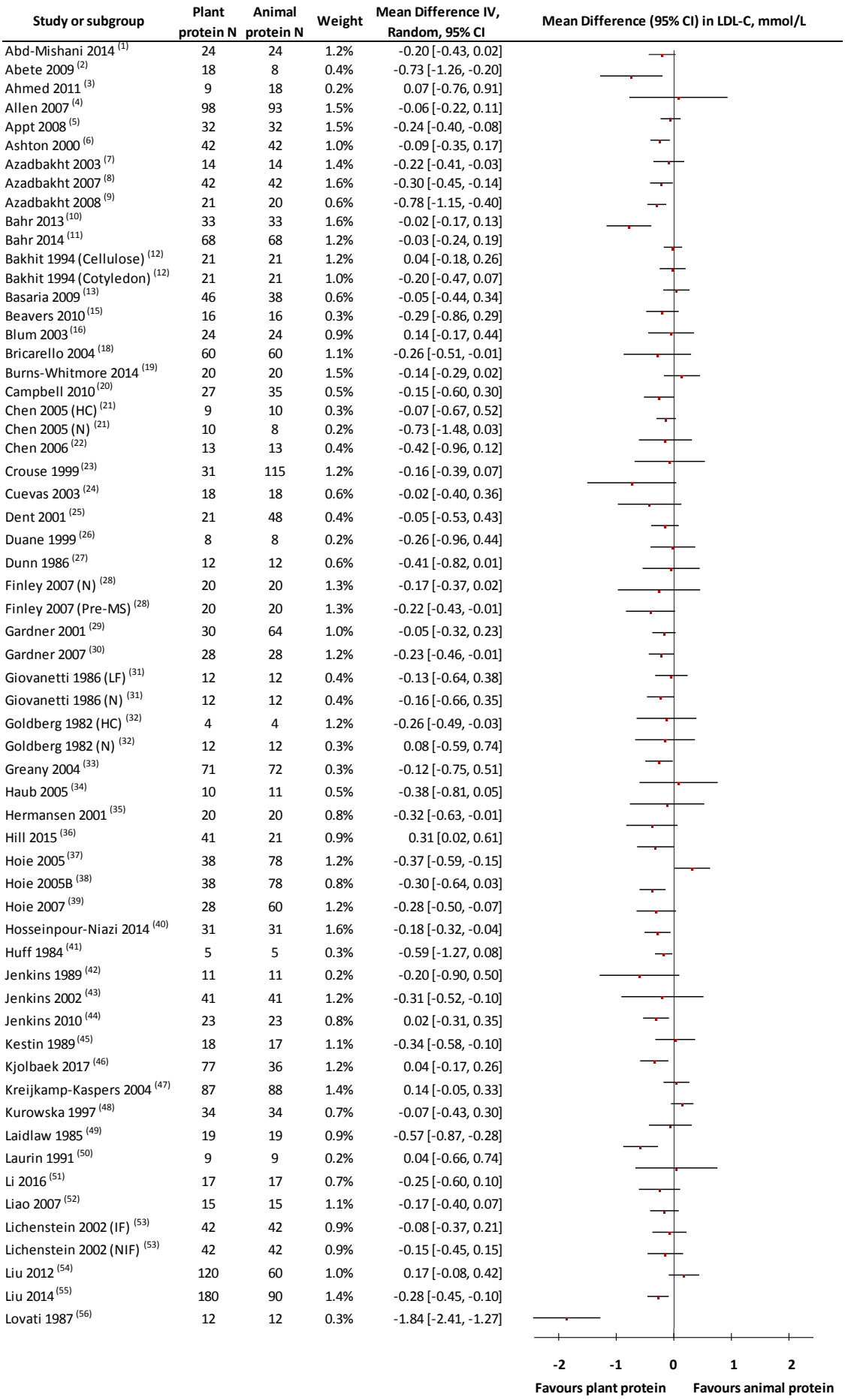

Figure S2. LDL-C Forest Plot, random-effects model.

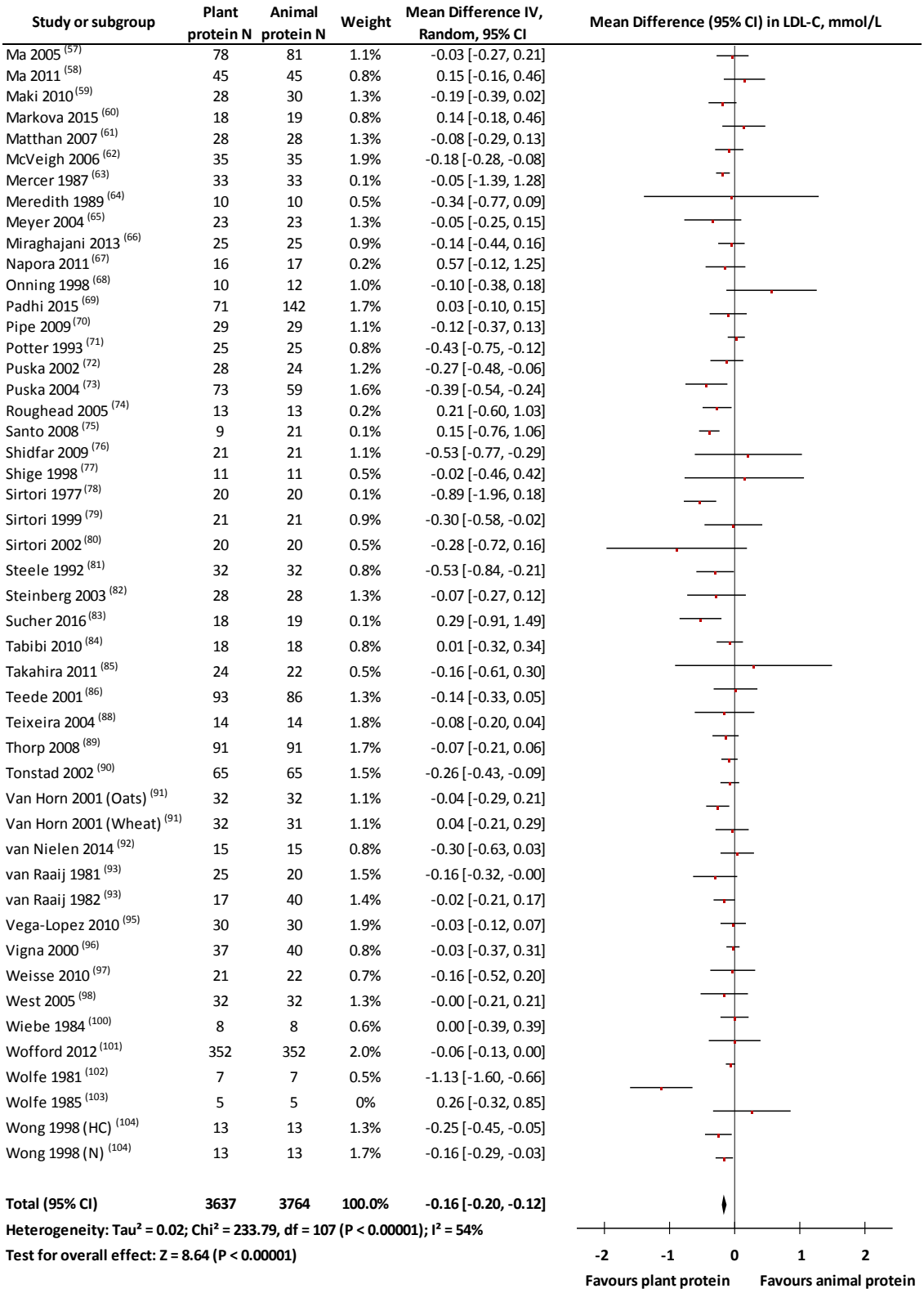

Figure S2 (Continued). LDL-C Forest Plot, random-effects model. HC=hypercholesterolemic; IF=isoflavones; LF=low-fat; N=normal; NIF=no isoflavones; Pre-MS=pre-metabolic syndrome. The pooled effect estimate (diamond) is shown. Paired analyses were applied to all crossover trials. The studies by Duane et al. 1999 [26], Lovati et al. 1987 [56], Sirtori et al. 2002 [80], and Van Horn et al. 2001 [91] were missing variance data, which were imputed using the average standard of the mean differences across included trials based on the respective trial's sample size. Data are expressed as MDs with 95% CIs, using generic inverse-variance random-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of $P<0.10$ and quantified by I^2, levels of ≥50% represented substantial heterogeneity.

Study or subgroup	Plant protein N	Animal protein N	Weight	Mean Difference IV, Fixed, 95% CI
Abd-Mishani 2014 [1]	24	24	0.9%	-0.20 [-0.43, 0.02]
Abete 2009 [2]	18	8	0.2%	-0.73 [-1.26, -0.20]
Ahmed 2011 [3]	9	18	0.1%	0.07 [-0.76, 0.91]
Allen 2007 [4]	98	93	1.7%	-0.06 [-0.22, 0.11]
Appt 2008 [5]	32	32	1.8%	-0.24 [-0.40, -0.08]
Ashton 2000 [6]	42	42	0.7%	-0.09 [-0.35, 0.17]
Azadbakht 2003 [7]	14	14	1.3%	-0.22 [-0.41, -0.03]
Azadbakht 2007 [8]	42	42	1.9%	-0.30 [-0.45, -0.14]
Azadbakht 2008 [9]	21	20	0.3%	-0.78 [-1.15, -0.40]
Bahr 2013 [10]	33	33	2.0%	-0.02 [-0.17, 0.13]
Bahr 2014 [11]	68	68	1.0%	-0.03 [-0.24, 0.19]
Bakhit 1994 (Cellulose) [12]	21	21	1.0%	0.04 [-0.18, 0.26]
Bakhit 1994 (Cotyledon) [12]	21	21	0.6%	-0.20 [-0.47, 0.07]
Basaria 2009 [13]	46	38	0.3%	-0.05 [-0.44, 0.34]
Beavers 2010 [15]	16	16	0.1%	-0.29 [-0.86, 0.29]
Blum 2003 [16]	24	24	0.5%	0.14 [-0.17, 0.44]
Bricarello 2004 [18]	60	60	0.7%	-0.26 [-0.51, -0.01]
Burns-Whitmore 2014 [19]	20	20	1.8%	-0.14 [-0.29, 0.02]
Campbell 2010 [20]	27	35	0.2%	-0.15 [-0.60, 0.30]
Chen 2005 (HC) [21]	9	10	0.1%	-0.07 [-0.67, 0.52]
Chen 2005 (N) [21]	10	8	0.1%	-0.73 [-1.48, 0.03]
Chen 2006 [22]	13	13	0.2%	-0.42 [-0.96, 0.12]
Crouse 1999 [23]	31	115	0.9%	-0.16 [-0.39, 0.07]
Cuevas 2003 [24]	18	18	0.3%	-0.02 [-0.40, 0.36]
Dent 2001 [25]	21	48	0.2%	-0.05 [-0.53, 0.43]
Duane 1999 [26]	8	8	0.1%	-0.26 [-0.96, 0.44]
Dunn 1986 [27]	12	12	0.3%	-0.41 [-0.82, 0.01]
Finley 2007 (N) [28]	20	20	1.2%	-0.17 [-0.37, 0.02]
Finley 2007 (Pre-MS) [28]	20	20	1.1%	-0.22 [-0.43, -0.01]
Gardner 2001 [29]	30	64	0.6%	-0.05 [-0.32, 0.23]
Gardner 2007 [30]	28	28	0.9%	-0.23 [-0.46, -0.01]
Giovanetti 1986 (LF) [31]	12	12	0.2%	-0.13 [-0.64, 0.38]
Giovanetti 1986 (N) [31]	12	12	0.2%	-0.16 [-0.66, 0.35]
Goldberg 1982 (HC) [32]	4	4	0.9%	-0.26 [-0.49, -0.03]
Goldberg 1982 (N) [32]	12	12	0.1%	0.08 [-0.59, 0.74]
Greany 2004 [33]	71	72	0.1%	-0.12 [-0.75, 0.51]
Haub 2005 [34]	10	11	0.2%	-0.38 [-0.81, 0.05]
Hermansen 2001 [35]	20	20	0.5%	-0.32 [-0.63, -0.01]
Hill 2015 [36]	41	21	0.5%	0.31 [0.02, 0.61]
Hoie 2005 [37]	38	78	1.0%	-0.37 [-0.59, -0.15]
Hoie 2005B [38]	38	78	0.4%	-0.30 [-0.64, 0.03]
Hoie 2007 [39]	28	60	1.0%	-0.28 [-0.50, -0.07]
Hosseinpour-Niazi 2014 [40]	31	31	2.3%	-0.18 [-0.32, -0.04]
Huff 1984 [41]	5	5	0.1%	-0.59 [-1.27, 0.08]
Jenkins 1989 [42]	11	11	0.1%	-0.20 [-0.90, 0.50]
Jenkins 2002 [43]	41	41	1.0%	-0.31 [-0.52, -0.10]
Jenkins 2010 [44]	23	23	0.4%	0.02 [-0.31, 0.35]
Kestin 1989 [45]	18	17	0.8%	-0.34 [-0.58, -0.10]
Kjolbaek 2017 [46]	77	36	1.0%	0.04 [-0.17, 0.26]
Kreijkamp-Kaspers 2004 [47]	87	88	1.3%	0.14 [-0.05, 0.33]
Kurowska 1997 [48]	34	34	0.4%	-0.07 [-0.43, 0.30]
Laidlaw 1985 [49]	19	19	0.5%	-0.57 [-0.87, -0.28]
Laurin 1991 [50]	9	9	0.1%	0.04 [-0.66, 0.74]
Li 2016 [51]	17	17	0.4%	-0.25 [-0.60, 0.10]
Liao 2007 [52]	15	15	0.8%	-0.17 [-0.40, 0.07]
Lichenstein 2002 (IF) [53]	42	42	0.6%	-0.08 [-0.37, 0.21]
Lichenstein 2002 (NIF) [53]	42	42	0.5%	-0.15 [-0.45, 0.15]
Liu 2012 [54]	120	60	0.7%	0.17 [-0.08, 0.42]
Liu 2014 [55]	180	90	1.5%	-0.28 [-0.45, -0.10]
Lovati 1987 [56]	12	12	0.1%	-1.84 [-2.41, -1.27]

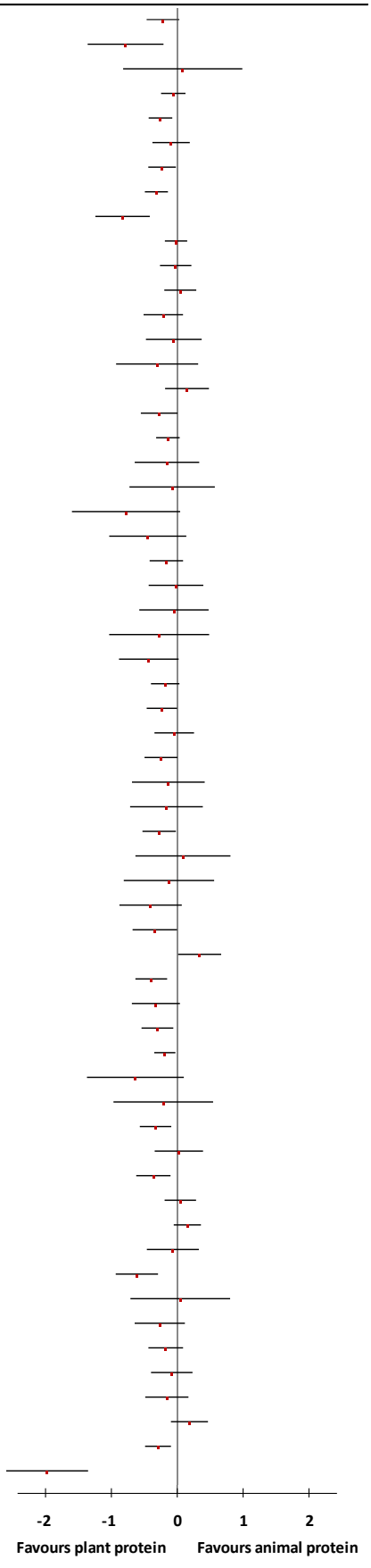

Figure S3. LDL-C Forest Plot, fixed-effects model.

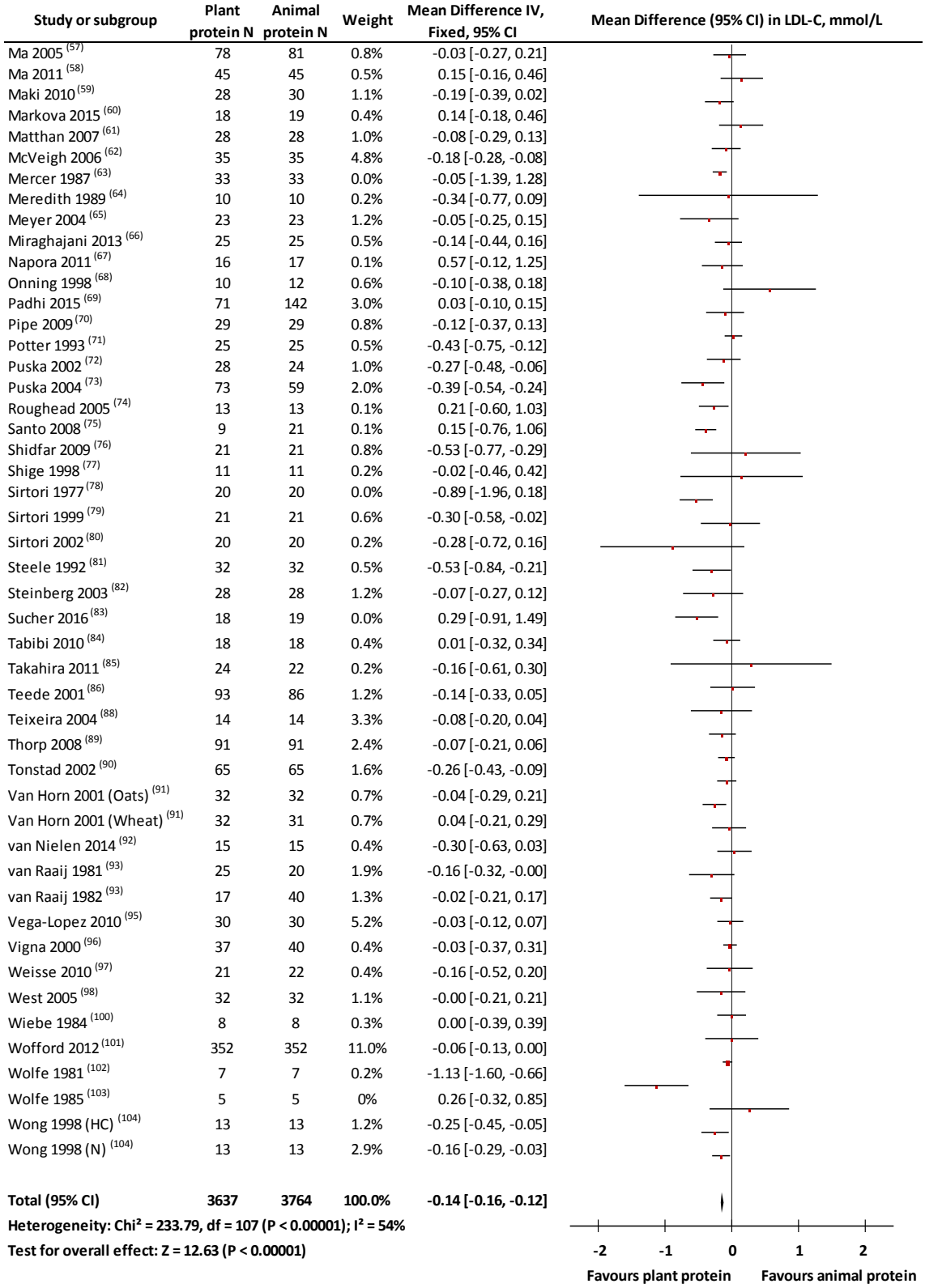

Figure S3 (Continued). LDL-C Forest Plot, fixed-effects model. HC=hypercholesterolemic; IF=isoflavones; LF=low-fat; N=normal; NIF=no isoflavones; Pre-MS=pre-metabolic syndrome. The pooled effect estimate (diamond) is shown. Paired analyses were applied to all crossover trials. The studies by Duane et al. 1999 [26], Lovati et al. 1987 [56], Sirtori et al. 2002 [80], and Van Horn et al. 2001 [91] were missing variance data, which were imputed using the average standard of the mean differences across included trials based on the respective trial's sample size. Data are expressed as MDs with 95% CIs, using generic inverse-variance fixed-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of P<0.10 and quantified by I^2, levels of ≥50% represented substantial heterogeneity.

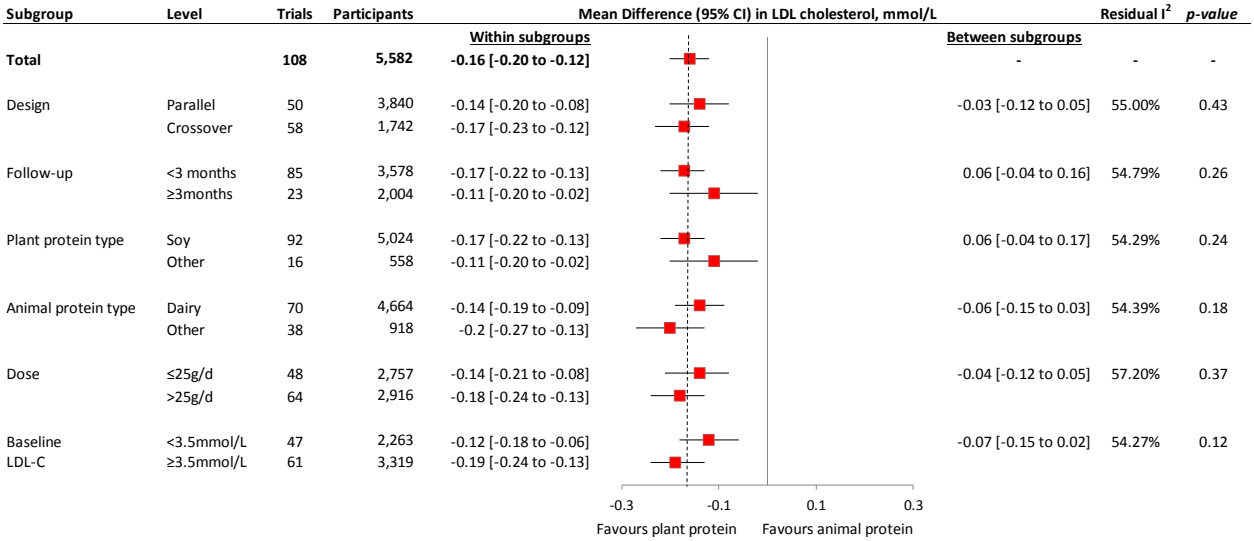

Figure S4. LDL-C Visual Subgroup. Point estimates for each subgroup level (squares) are the pooled effect estimates. The dashed line represents the pooled effect estimate for the overall (total) analysis. The residual I^2 value indicates the interstudy heterogeneity unexplained by the subgroup. Statistically significant pairwise subgroup effect modification by meta-regression analyses at $P < 0.05$.

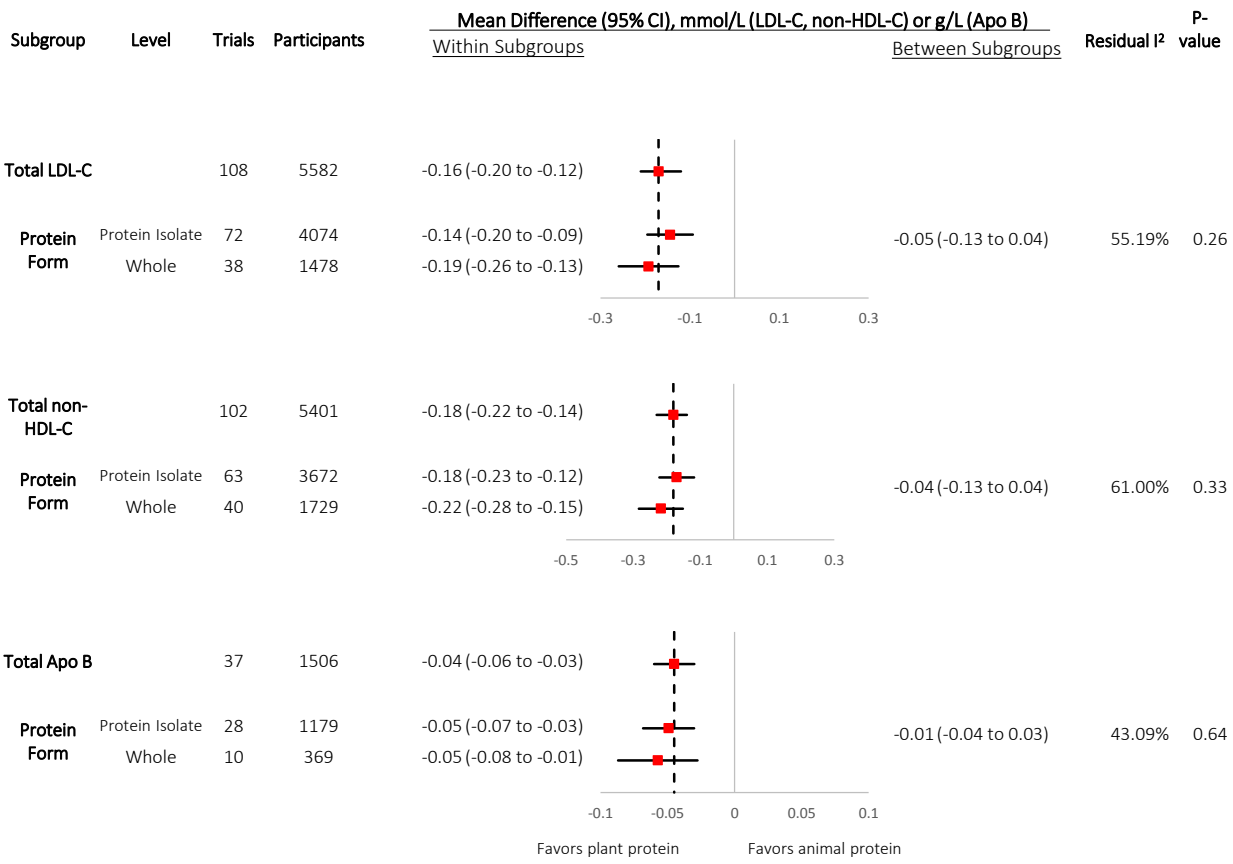

Figure S5. Post-Hoc Subgroups. Point estimates for each subgroup level (squares) are the pooled effect estimates. The dashed line represents the pooled effect estimate for the overall (total) analysis. The residual I^2 value indicates the interstudy heterogeneity unexplained by the subgroup. Statistically significant pairwise subgroup effect modification by meta-regression analyses at $P < 0.05$.

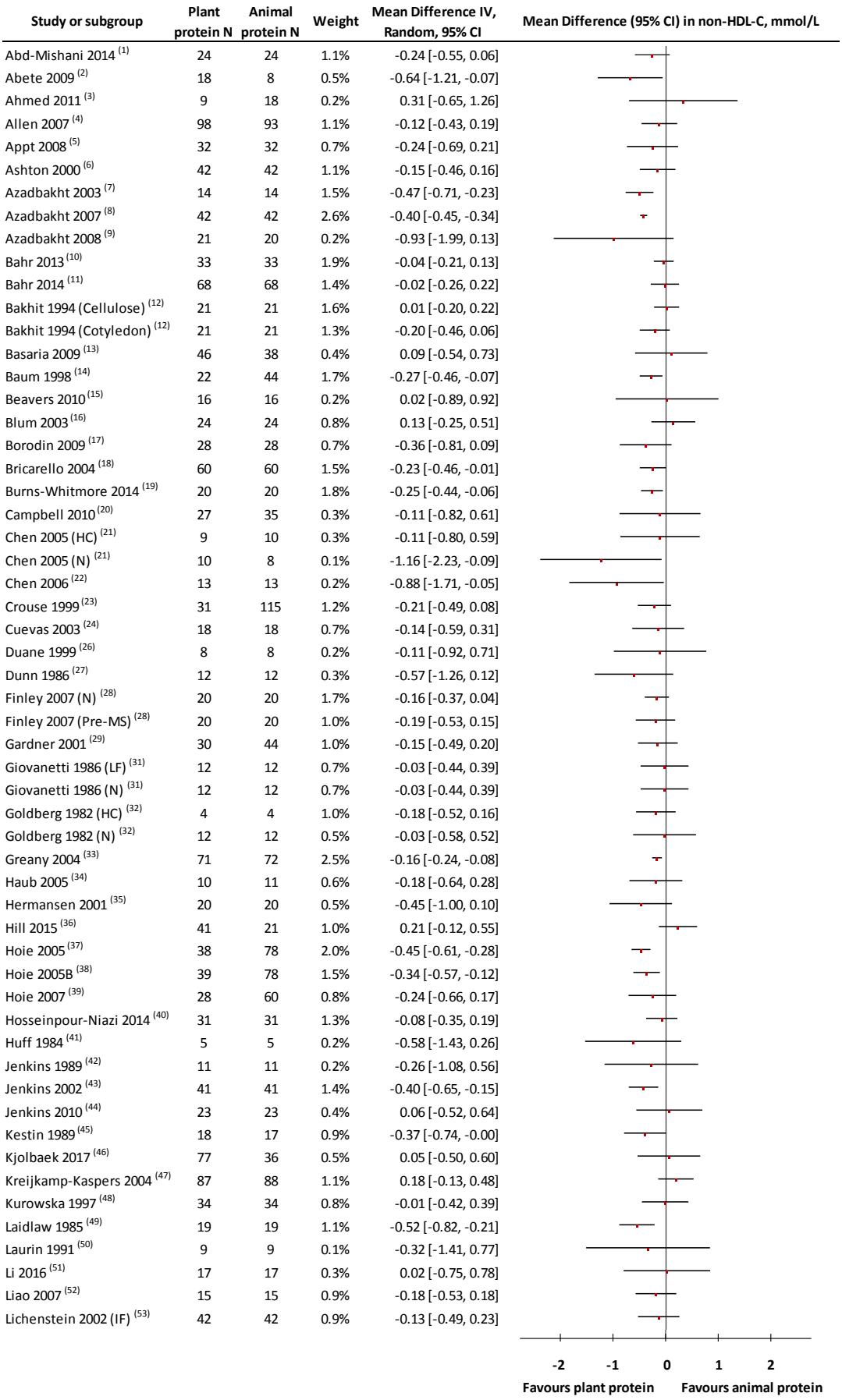

Figure S6. Non-HDL-C Forest Plot, random-effects model.

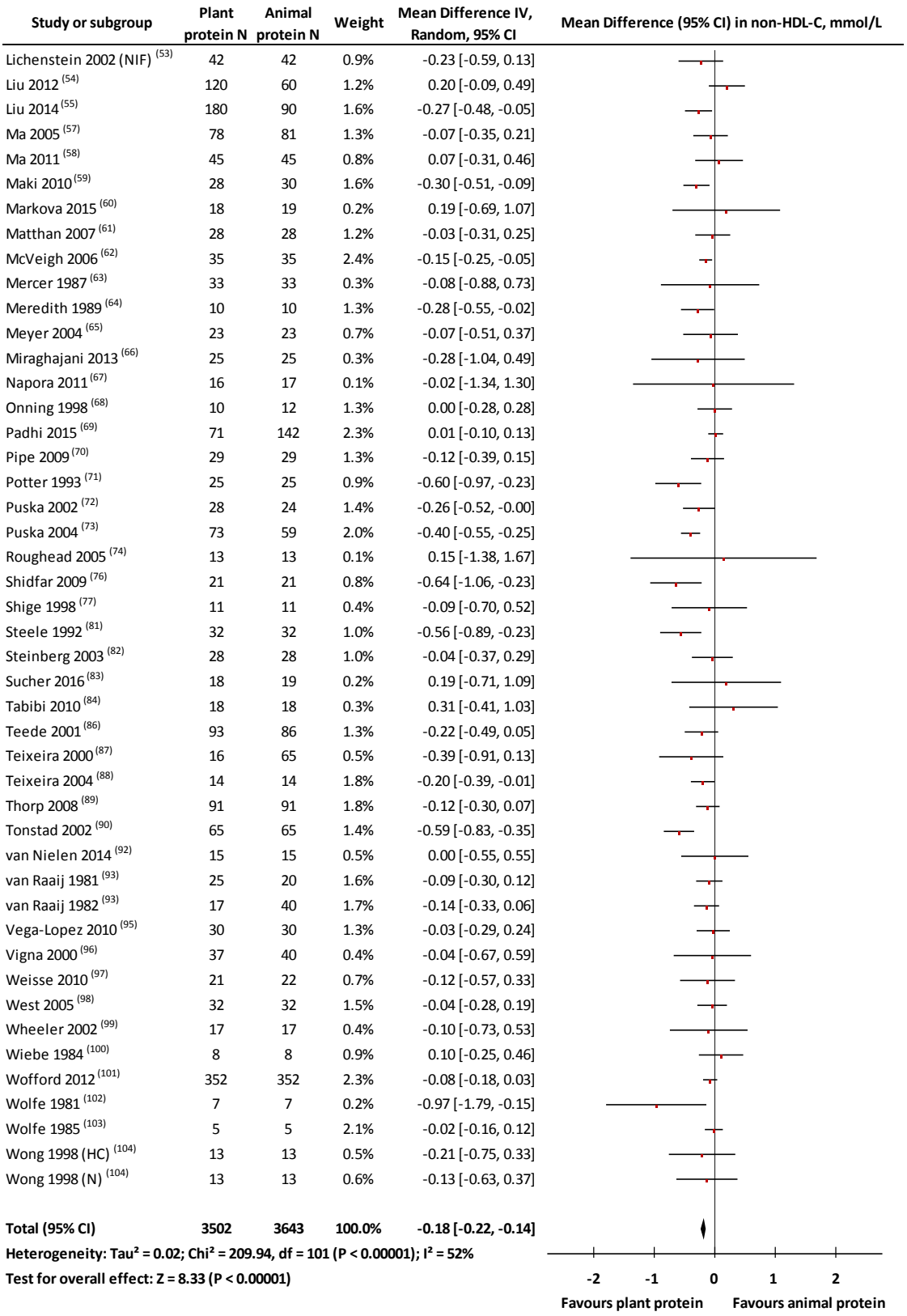

Figure S6 (Continued). Non-HDL-C Forest Plot, random-effects model. HC=hypercholesterolemic; IF=isoflavones; LF=low-fat; N=normal; NIF=no isoflavones; Pre-MS=pre-metabolic syndrome. The pooled effect estimate (diamond) is shown. Paired analyses were applied to all crossover trials. The study by Duane et al. 1999 [26] was missing variance data, which was imputed using the average standard of the mean differences across included trials based on the respective trial's sample size. Data are expressed as MDs with 95% CIs, using generic inverse-variance random-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of P<0.10 and quantified by I^2, levels of ≥50% represented substantial heterogeneity.

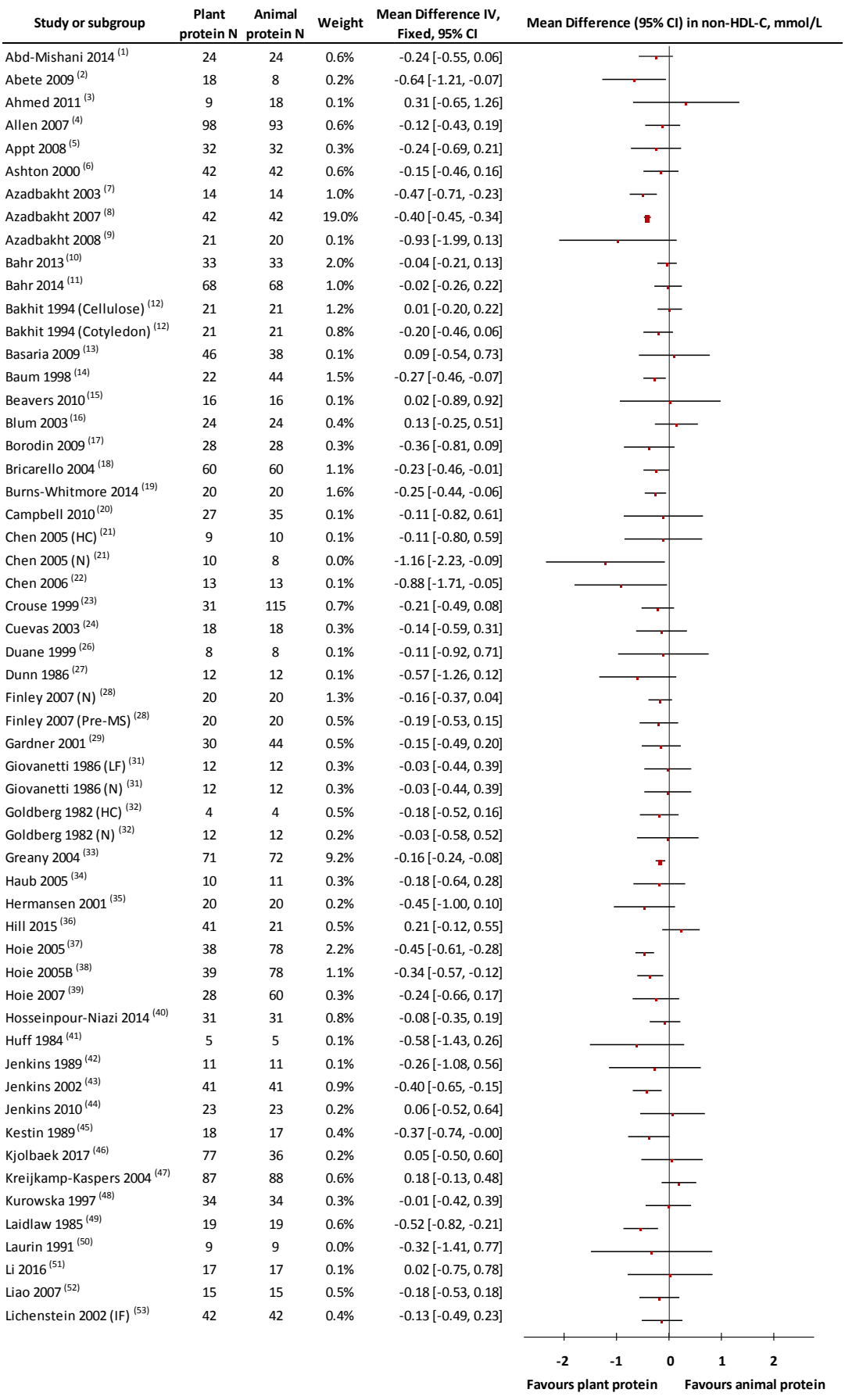

Figure S7. Non-HDL-C Forest Plot, fixed-effects model.

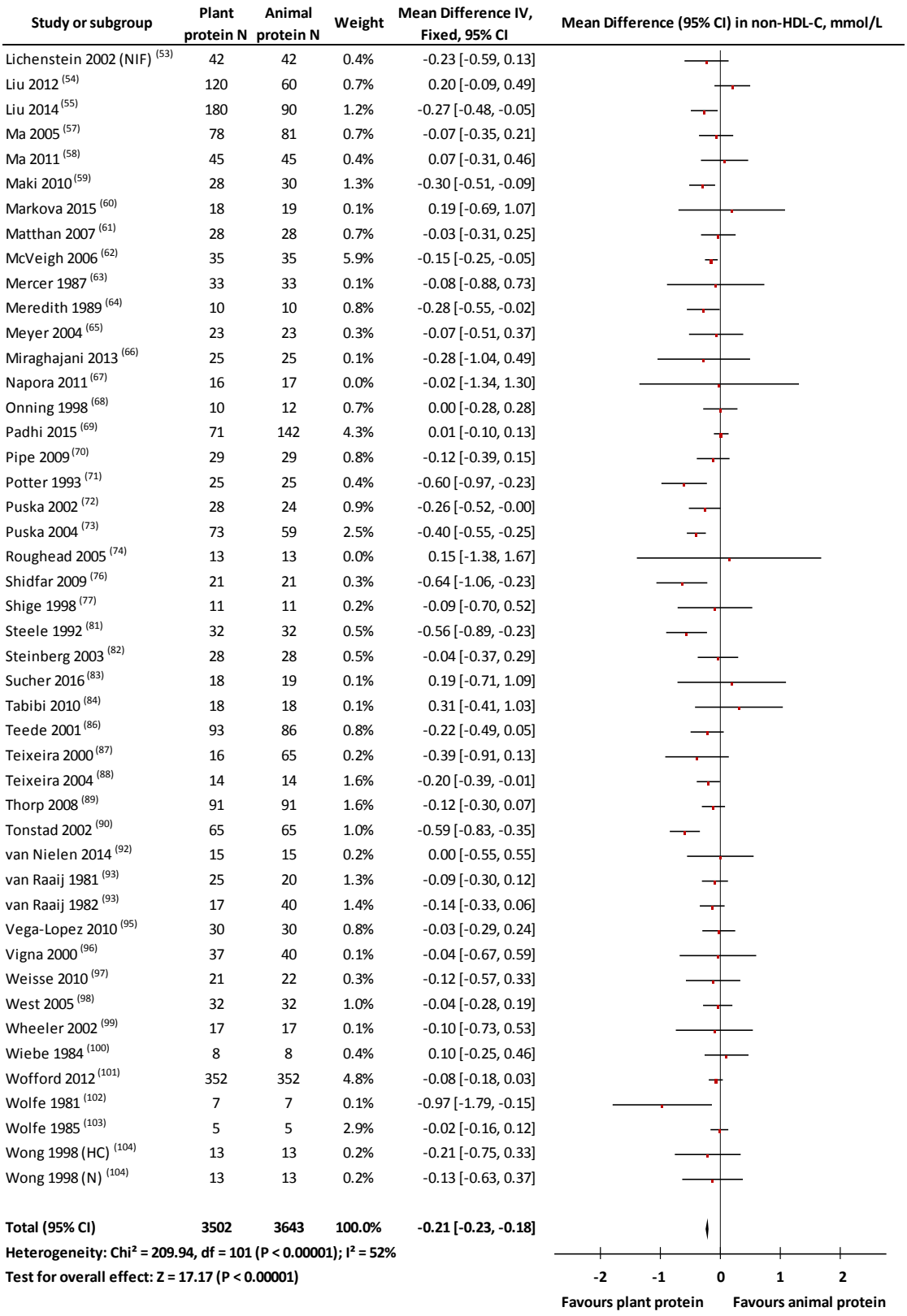

Figure S7 (Continued). Non-HDL-C Forest Plot, fixed-effects model. HC=hypercholesterolemic; IF=isoflavones; LF=low-fat; N=normal; NIF=no isoflavones; Pre-MS=pre-metabolic syndrome. The pooled effect estimate (diamond) is shown. Paired analyses were applied to all crossover trials. The study by Duane et al. 1999 [26] was missing variance data, which was imputed using the average standard of the mean differences across included trials based on the respective trial's sample size. Data are expressed as MDs with 95% CIs, using generic inverse-variance fixed-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of P<0.10 and quantified by I^2, levels of ≥50% represented substantial heterogeneity.

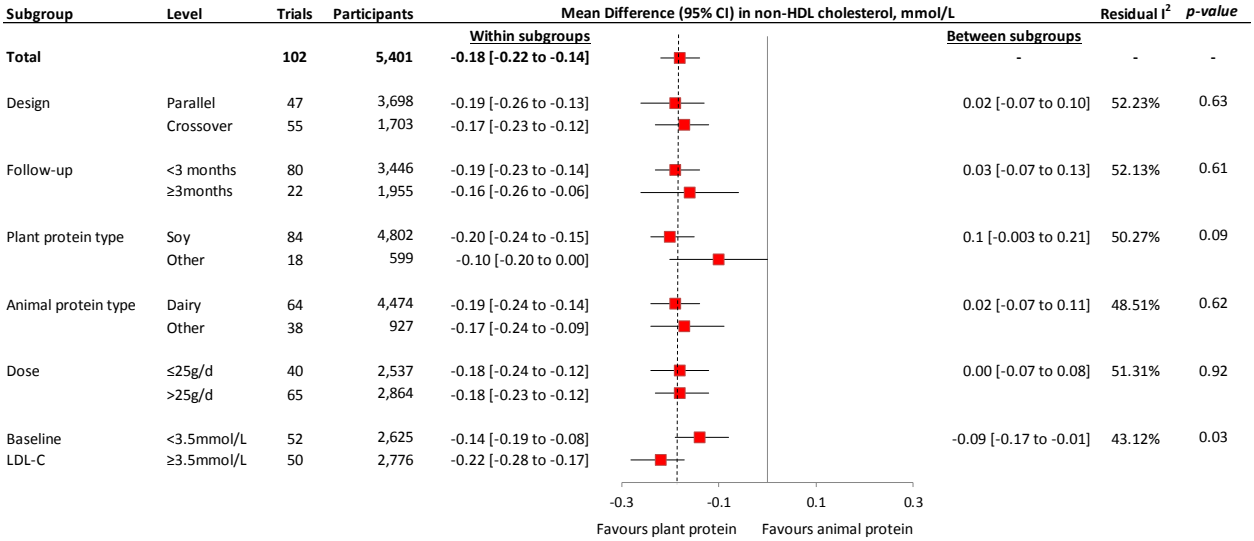

Figure S8. Non-HDL-C Visual Subgroup. Point estimates for each subgroup level (squares) are the pooled effect estimates. The dashed line represents the pooled effect estimate for the overall (total) analysis. The residual I^2 value indicates the interstudy heterogeneity unexplained by the subgroup. Statistically significant pairwise subgroup effect modification by meta-regression analyses at $P < 0.05$.

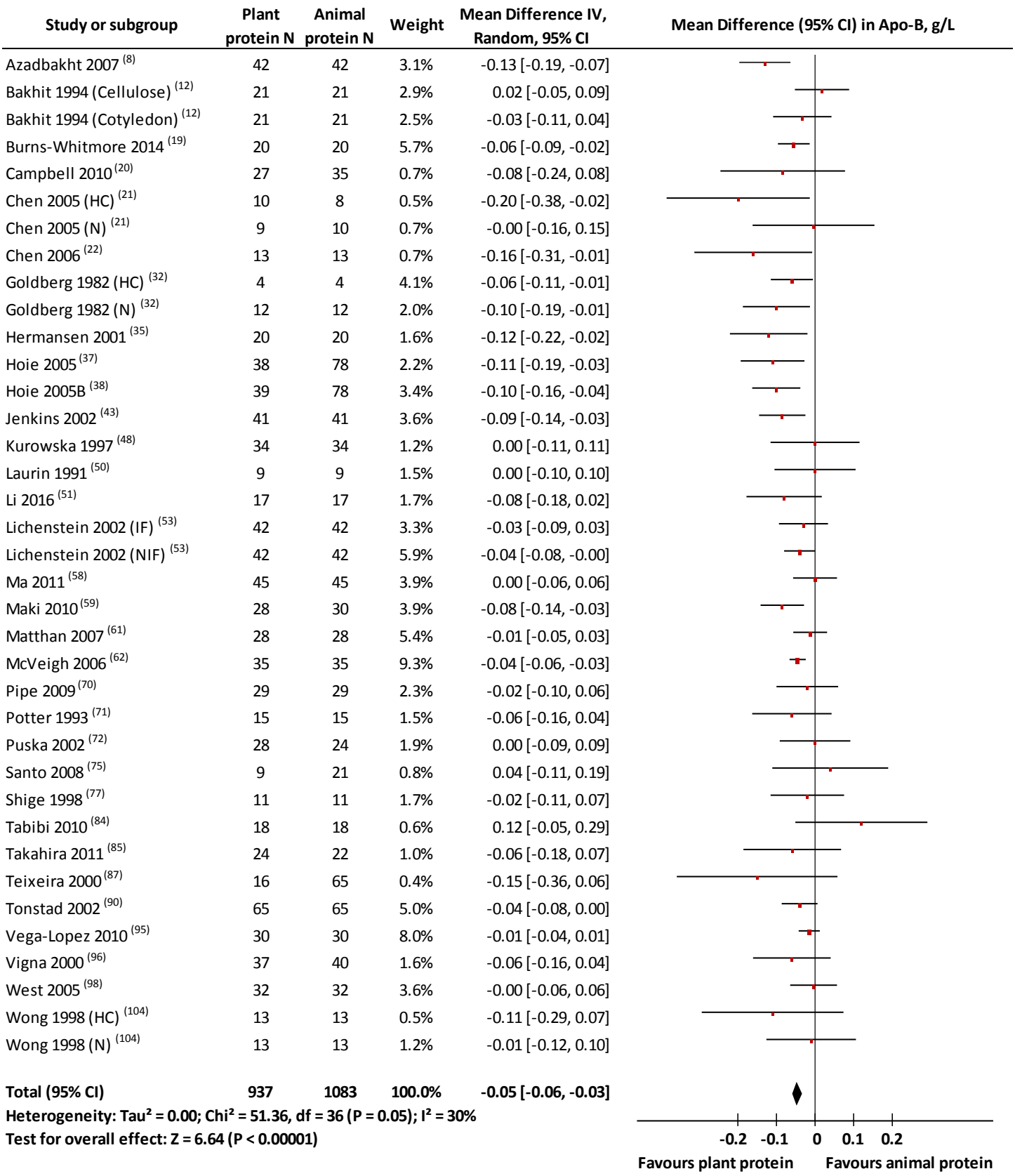

Figure S9. Apo-B Forest Plot, random-effects model. HC=hypercholesterolemic; IF=isoflavones; LF=low-fat; N=normal; NIF=no isoflavones. The pooled effect estimate (diamond) is shown. Paired analyses were applied to all crossover trials. Data are expressed as MDs with 95% CIs, using generic inverse-variance random-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of P<0.10 and quantified by I^2, levels of ≥50% represented substantial heterogeneity.

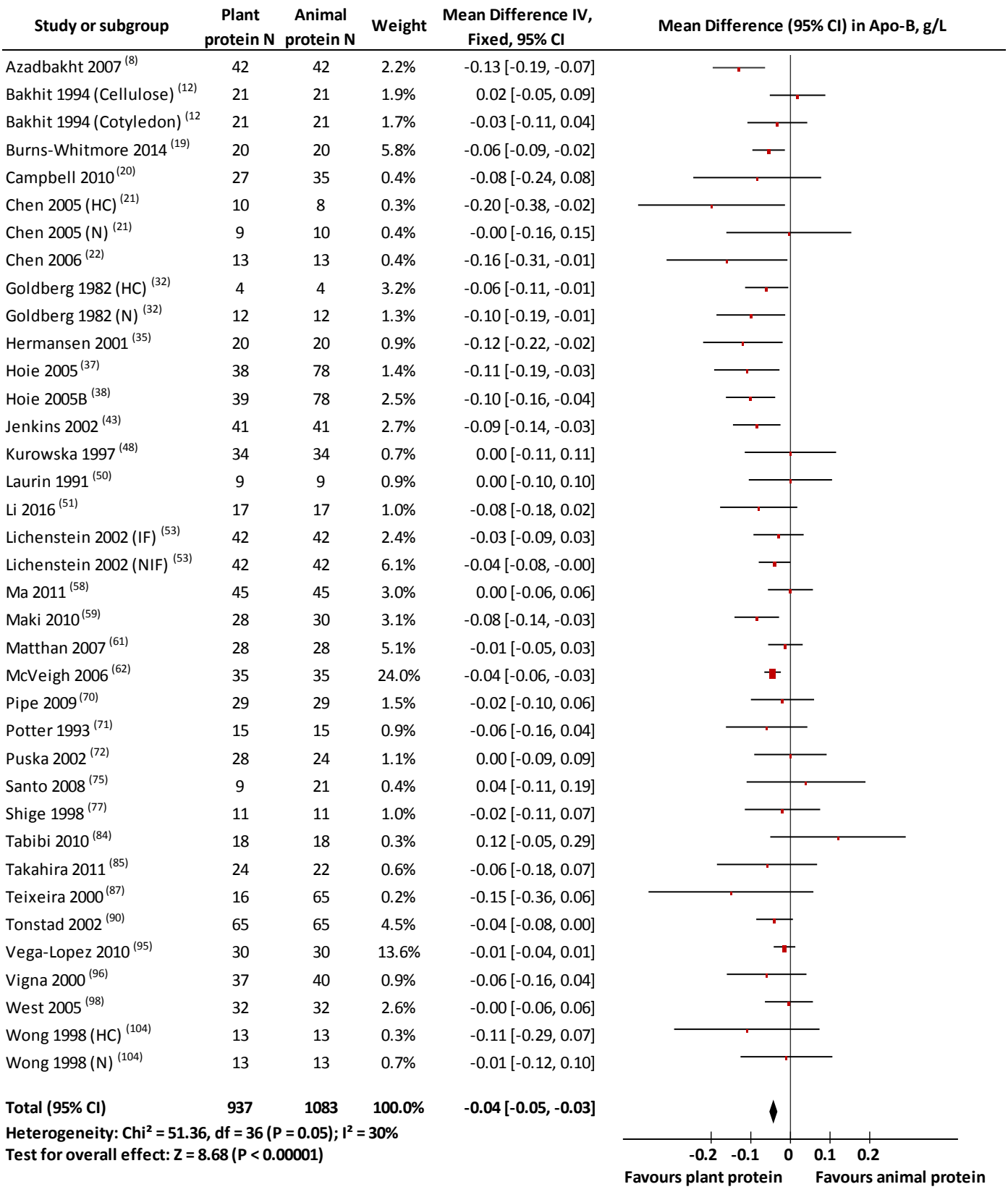

Figure S10. Apo-B Forest Plot, fixed-effects model. HC=hypercholesterolemic; IF=isoflavones; LF=low-fat; N=normal; NIF=no isoflavones. The pooled effect estimate (diamond) is shown. Paired analyses were applied to all crossover trials. Data are expressed as MDs with 95% CIs, using generic inverse-variance fixed-effects models. Inter-study heterogeneity was tested using the Cochran Q statistic (chi-square) at a significance level of P<0.10 and quantified by I^2, levels of ≥50% represented substantial heterogeneity.

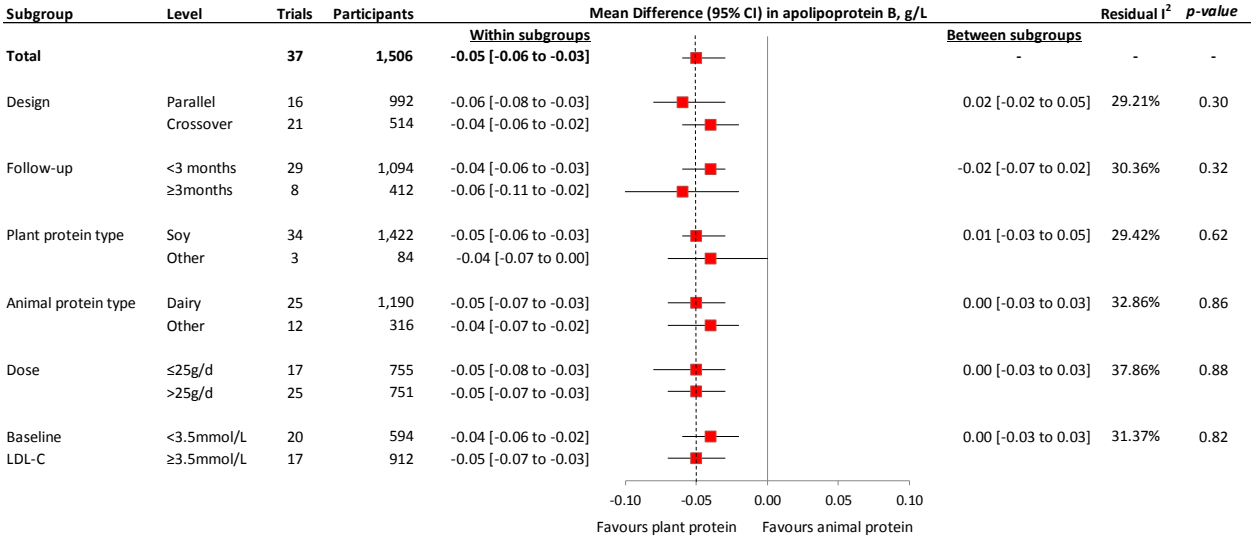

Figure S11. Apo-B Visual Subgroup. Point estimates for each subgroup level (squares) are the pooled effect estimates. The dashed line represents the pooled effect estimate for the overall (total) analysis. The residual I^2 value indicates the interstudy heterogeneity unexplained by the subgroup. Statistically significant pairwise subgroup effect modification by meta-regression analyses at $P < 0.05$.

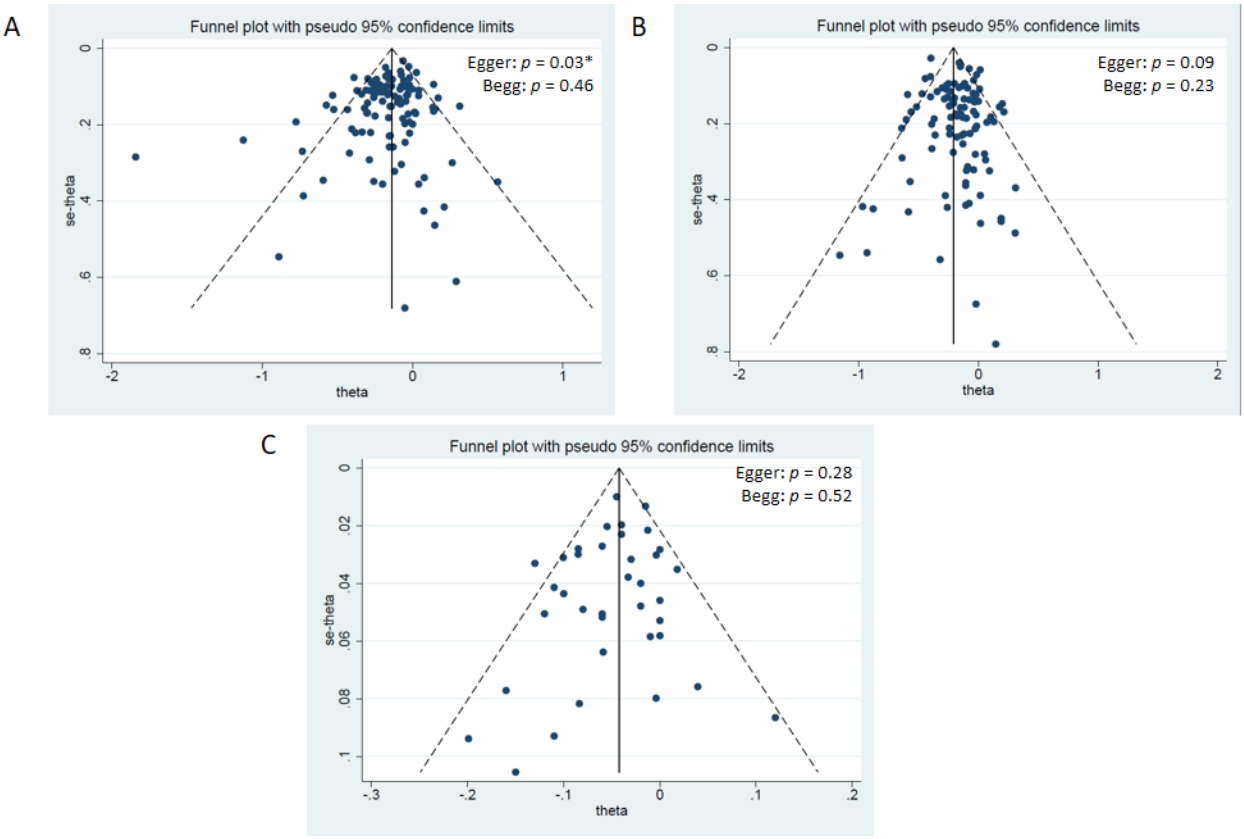

Figure S12. Funnel Plots. Publication bias funnel plots for LDL (A), non-HDL (B), and apolipoprotein B (C). The solid line represents the pooled effect estimate expressed as the weighted mean difference (MD) of each analysis, and dashed lines represent pseudo-95% confidence limits. Circles represent effect estimates of included trials. p-values of Egger and Begg tests for publication bias are shown at top right for each analysis. *Statistically significant ($p < 0.05$).

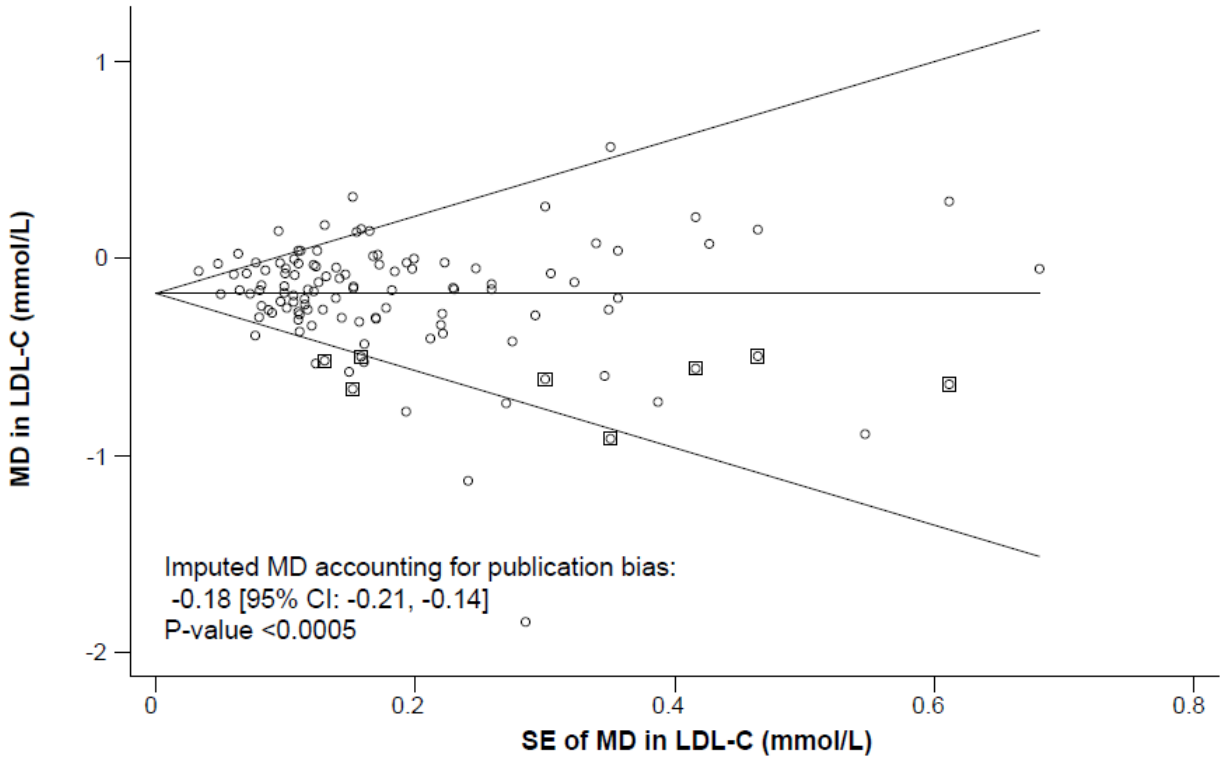

Figure S13. LDL-C Trim-And-Fill Funnel Plot. The horizontal line represents the pooled effect estimate expressed as a mean difference. The diagonal lines represent the pseudo 95% CIs of the mean difference. The clear circles represent effect estimates for each included study.

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