

Supplementary Tables and Figures

Supplementary table 1. Excluded studies and reason for exclusion

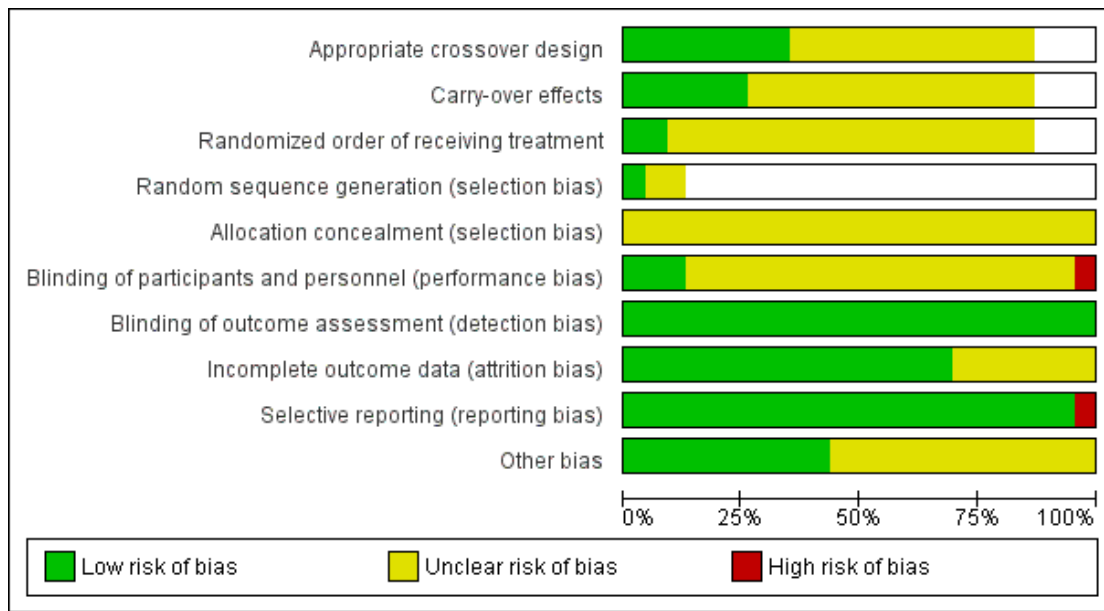
Study	Reason for Exclusion
Muller et al, 1998 ²³	Intervention group received a combination of palm oil, soybean oil and rapeseed oil
Pedersen et al, 2005 ²⁴	Intervention group received a combination of palm oil, soybean oil and rapeseed oil
Zock et al, 1994 ²⁵	Intervention group received a combination of palm oil, cotton seed oil and sunflower oil
Stonehouse et al, 2015 ²⁶	Intervention period lasted less than 2 weeks
Scholtz et al, 2004 ²⁷	Subjects are allowed to use lipid -lowering agents

Supplementary table 2. Pooled estimates of effects on TC and LDL-C within various subgroups for the comparison between palm oil and monounsaturated fats (MUFAs)

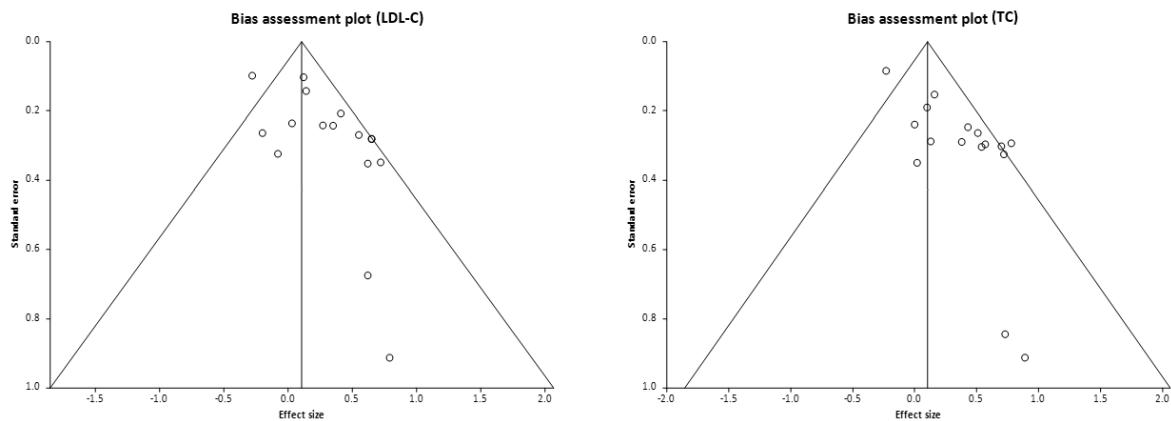
Subgroup	LDL-C				TC					
	Studies, n	Participants, n	Effect estimate; <i>p</i> value	I ² , %	Subgroup heterogeneity %; <i>p</i> value of subgroup heterogeneity	Studies, n	Participants, n	Effect estimate; <i>p</i> value	I ² , %	Subgroup heterogeneity %; <i>p</i> value of subgroup heterogeneity
Overall	16	365	0.24 (0.06, 0.42); <0.01	60		16	365	0.31 (0.11, 0.51); <0.01	62	
Gender					0 (0.49)					0 (0.52)
Male	7	96	0.35 (0.08, 0.62); 0.01	45		7	96	0.38 (0.17, 0.60); <0.01	0	
Female	1	16	0.79 (-1.00, 2.58); 0.39	N/A		1	16	0.89 (-0.90, 2.68); 0.33	N/A	
Male and female	8	253	0.16 (-0.09, 0.40); 0.20	68		8	253	0.22 (-0.05, 0.49); 0.12	71	
Participants' health condition					41.6 (0.18)					0 (0.39)
Healthy	6	187	0.12 (-0.01, 0.26); 0.08	0		6	187	0.19 (0.01, 0.37); 0.04	0	
Mixed	4	66	0.36 (0.11, 0.61); <0.01	0		4	66	0.40 (0.09, 0.72); 0.01	28	
Hyperlipidemic	6	112	0.44 (-0.11, 1.00); 0.22	78		6	112	0.48 (-0.09, 1.04); <0.01	80	
Geography					85.9 (<0.01)					87.3 (<0.01)
Western	7	120	0.57 (0.34, 0.79); <0.01	0		7	120	0.61 (0.38, 0.84); <0.01	0	
Asian	6	159	-0.02 (-0.23, 0.18); 0.83	56		6	159	-0.00 (-0.20, 0.20); 0.97	40	
Australian	3	86	0.27 (-0.01, 0.55); 0.06	0		3	86	0.35 (0.02, 0.68); 0.04	0	
Type of comparator oil					52.1 (0.08)					39.3 (0.16)
Safflower oil	2	31	0.58 (0.16, 0.99); 0.01	0		2	31	0.62 (0.20, 1.04); <0.01	0	
Groundnut oil	2	24	-0.07 (-0.42, 0.27); 0.68	0		2	24	0.05 (-0.31, 0.41); 0.77	0	
Canola oil	2	38	0.32 (-0.18, 0.82); 0.21	68		2	38	0.40 (-0.26, 1.07); 0.23	74	
Sunflower oil	6	116	0.40 (0.17, 0.63); <0.01	0		6	116	0.46 (0.20, 0.72); <0.01	0	
Others (rapeseed, soybean, olive and peanut oil)	4	156	0.06 (-0.31, 0.42); 0.76	72		4	156	0.10 (-0.27, 0.48); 0.58	73	
Percentage of total energy from fat					87.2 (<0.01)					82.2 (0.02)
25-35 %	10	260	0.10 (-0.09, 0.29); 0.31	59		10	260	0.17 (-0.05, 0.39); 0.14	60	
>35%	6	105	0.55 (0.30, 0.80); <0.01	0		6	105	0.58 (0.33, 0.83); <0.01	0	

Supplementary table 3. Sensitivity analyses

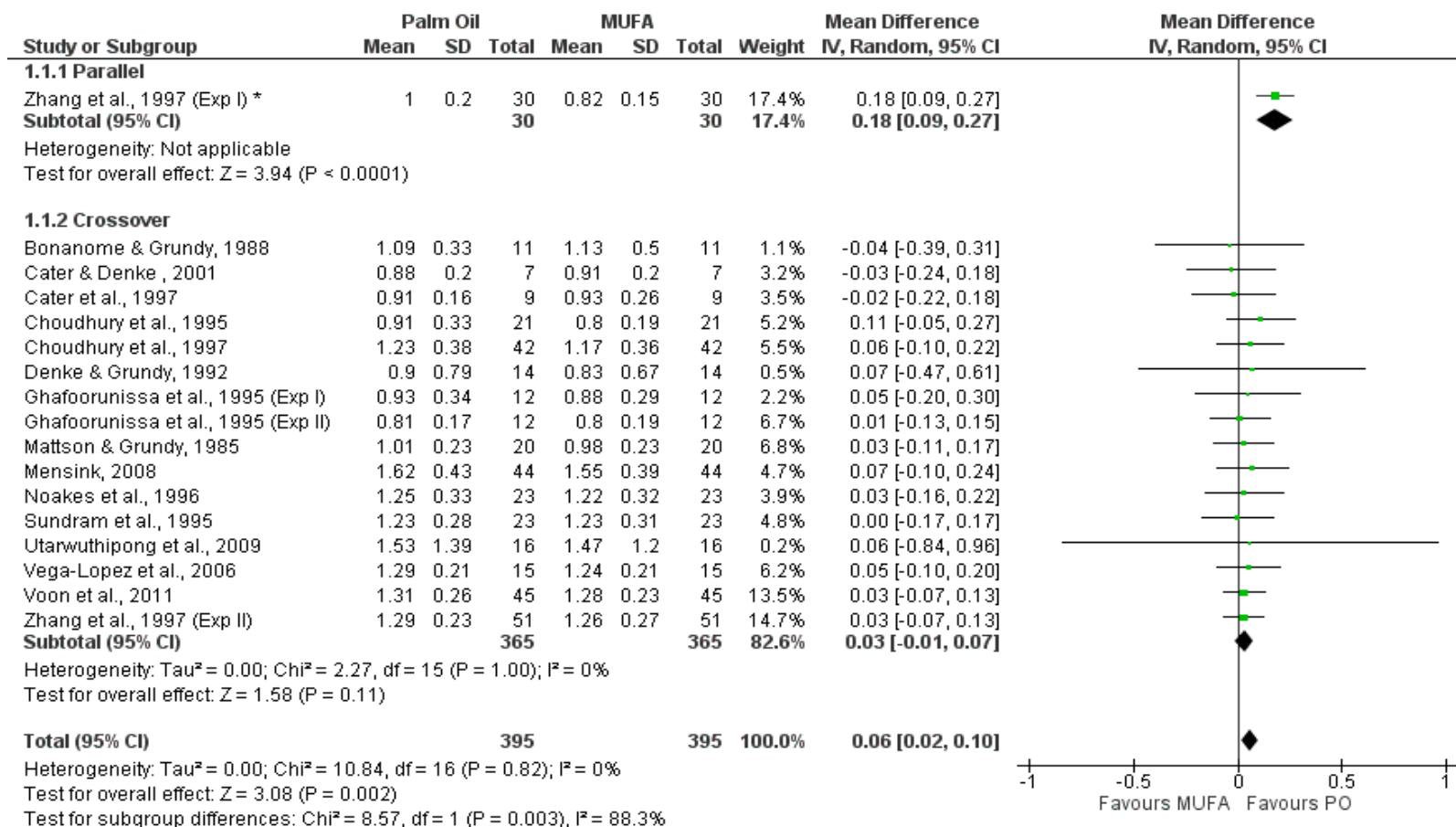
Removal of Choudhury et al, 1997	Participants, n	Effect estimate; <i>p</i> value	I ² , %
HDL-C	42	0.03 (-0.01, 0.07); 0.15	0
LDL-C	42	0.24 (0.05, 0.43); 0.01	62
TC	42	0.31 (0.10, 0.52); <0.01	64
TG	42	0.01 (-0.07, 0.09); 0.85	0



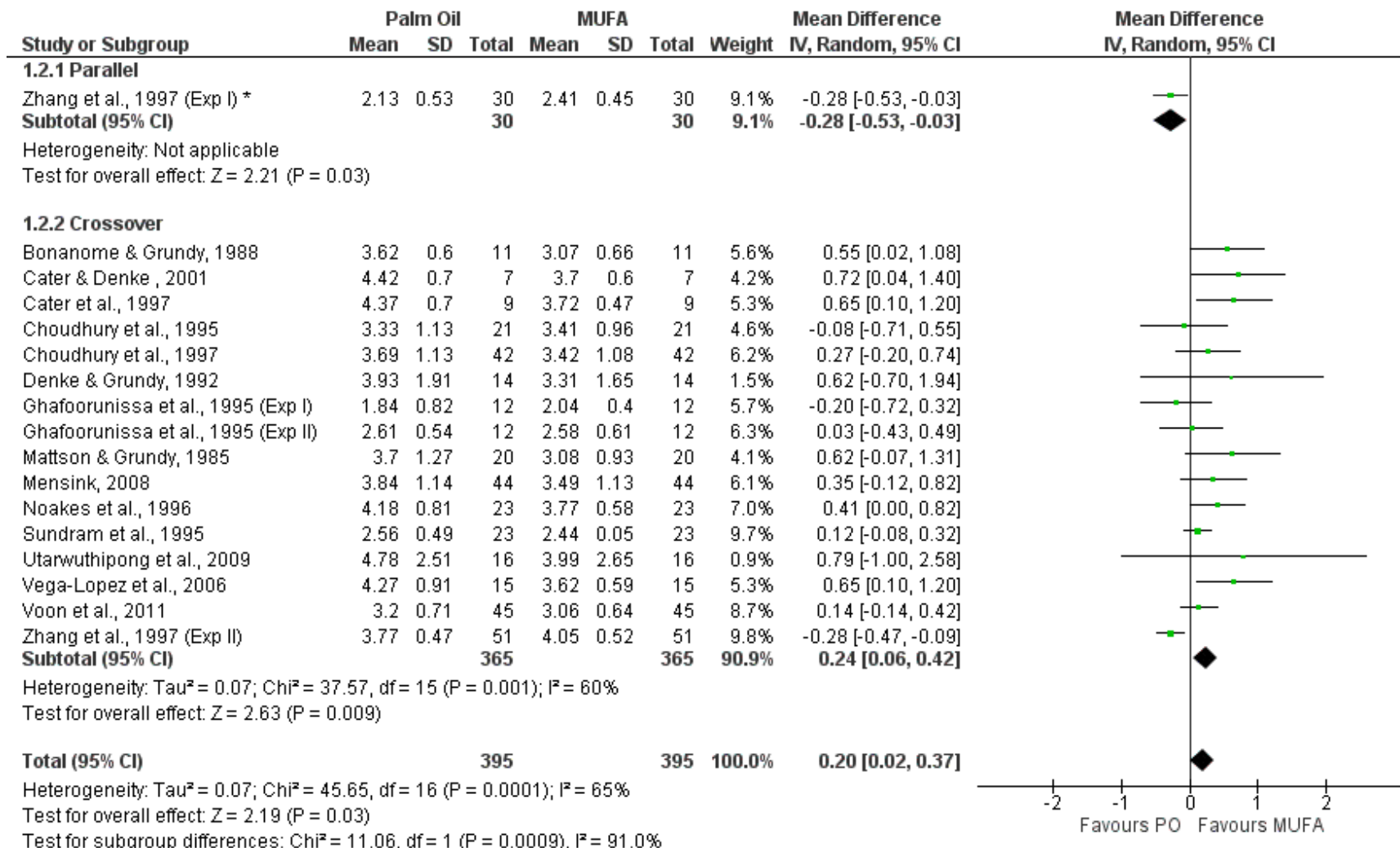
Supplementary figure 1. Risk of bias graph: review author’s judgements about each risk of bias item as percentages across all included studies



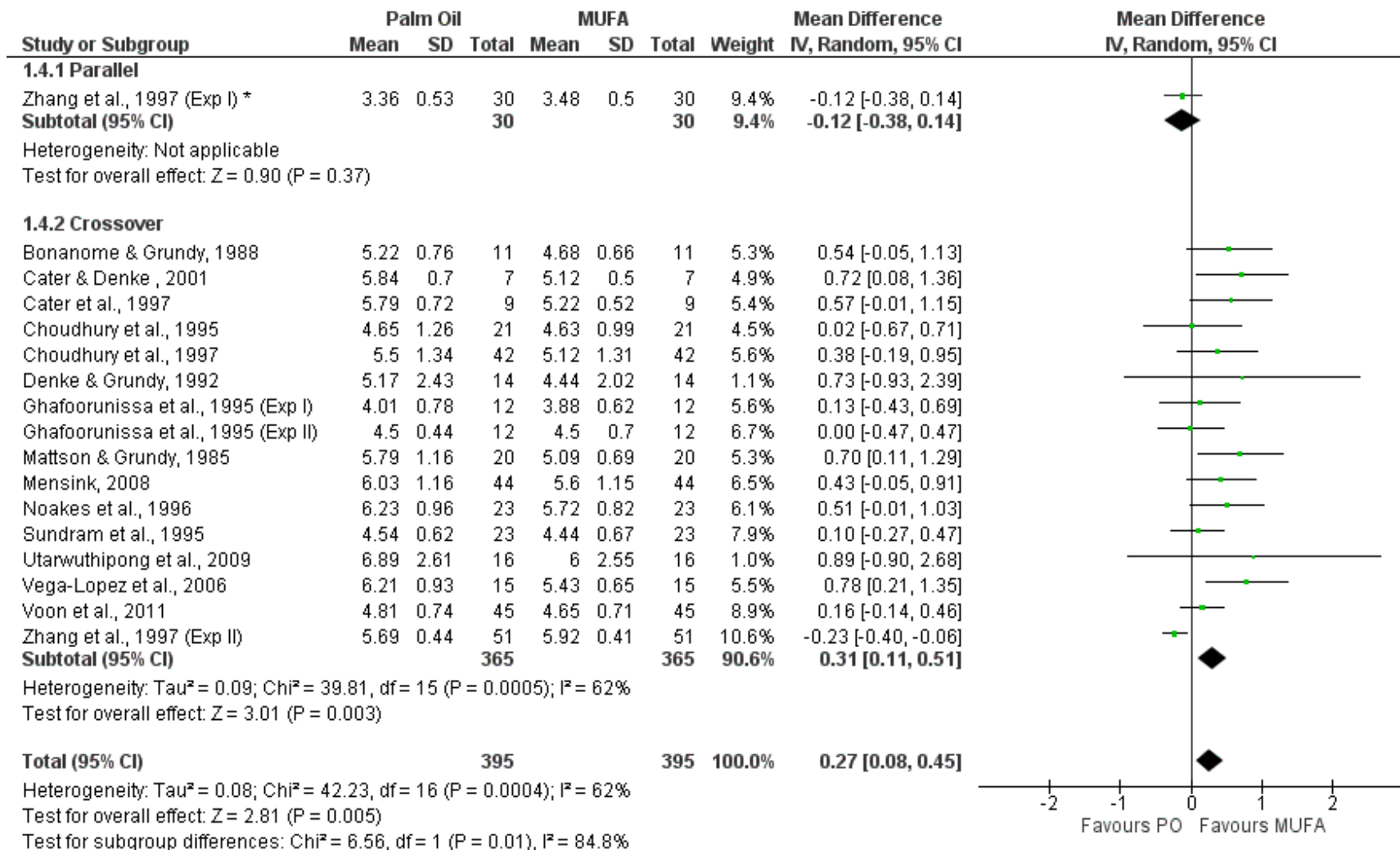
Supplementary figure 2. Bias assessment plot of LDL-C and TC for palm oil against MUFAs. Publication bias tests for LDL-C: Begg-Mazumdar: Kendall's tau=0.283333, $p=0.139$; Egger: bias=2.011142 (95% CI=0.635414 to 3.38687), $p=0.0073$. Publication bias tests for TC: Begg-Mazumdar: Kendall's tau=0.283333, $p=0.139$; Egger: bias=2.512799 (95% CI=1.480948 to 3.54465), $p=0.0001$.



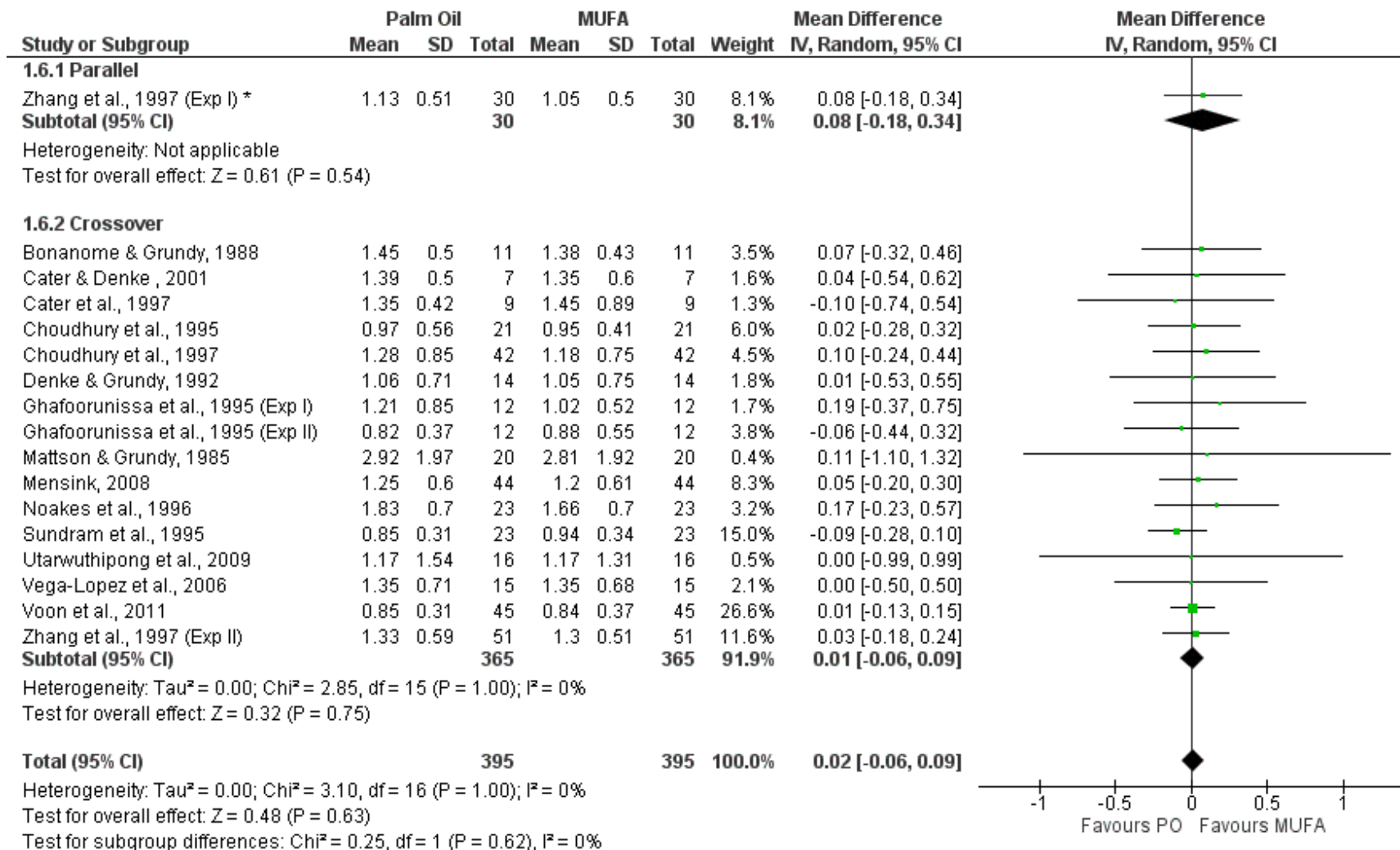
Supplementary figure 3. Summary plot for the effect of palm oil rich diet and MUFA rich diet on HDL-C. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and MUFA rich diet on HDL-C. Analyses conducted by random effects model.



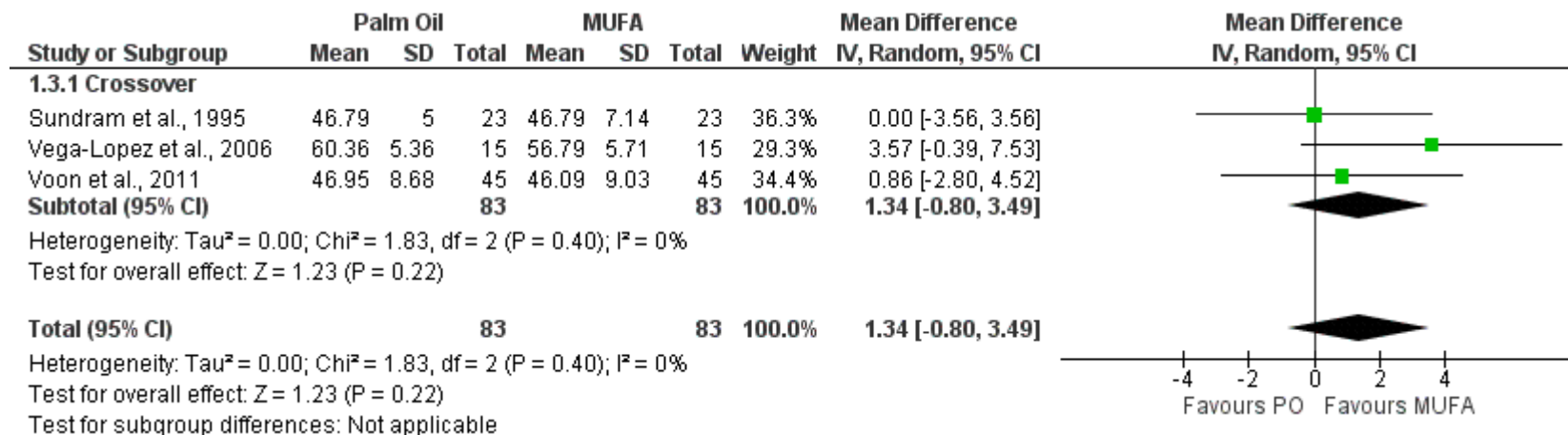
Supplementary figure 4. Summary plot for the effect of palm oil rich diet and MUFA rich diet on LDL-C. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and MUFA rich diet on LDL-C. Analyses conducted by random effects model.



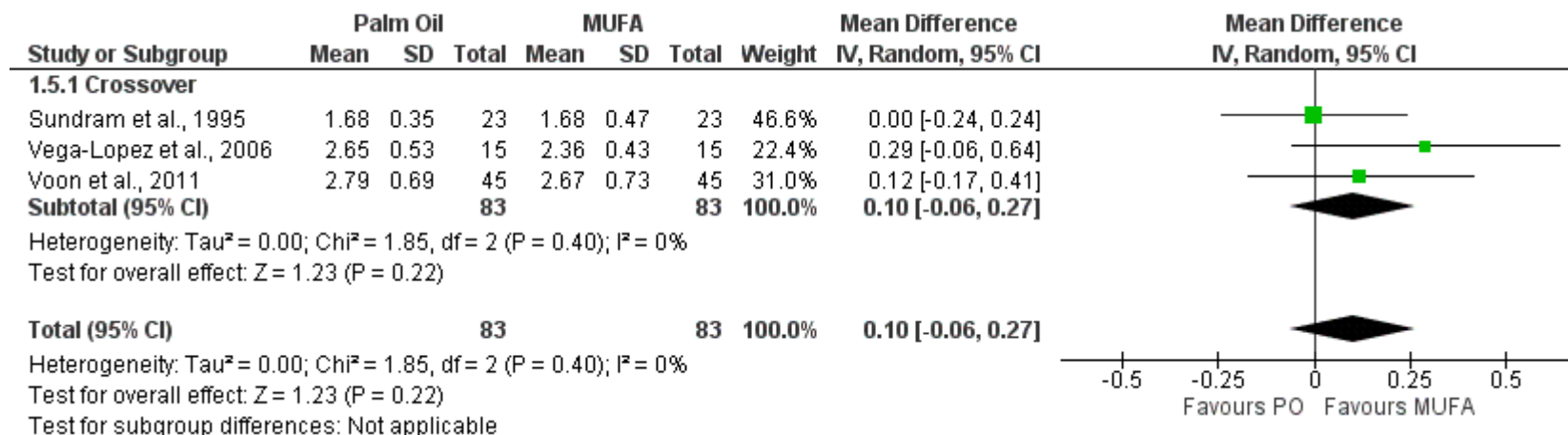
Supplementary figure 5. Summary plot for the effect of palm oil rich diet and MUFA rich diet on TC. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and MUFA rich diet on TC. Analyses conducted by random effects model.



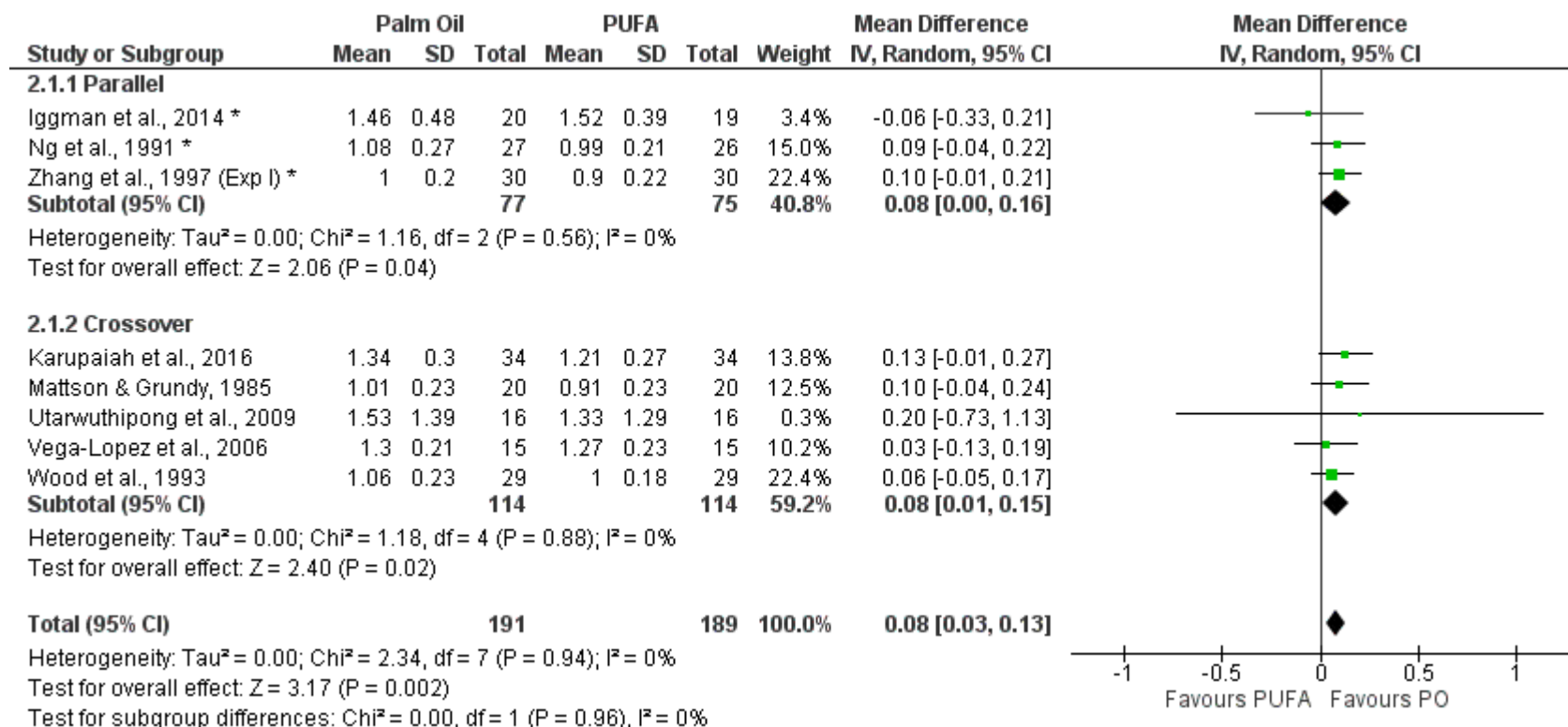
Supplementary figure 6. Summary plot for the effect of palm oil rich diet and MUFA rich diet on TG. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and MUFA rich diet on TG. Analyses conducted by random effects model.



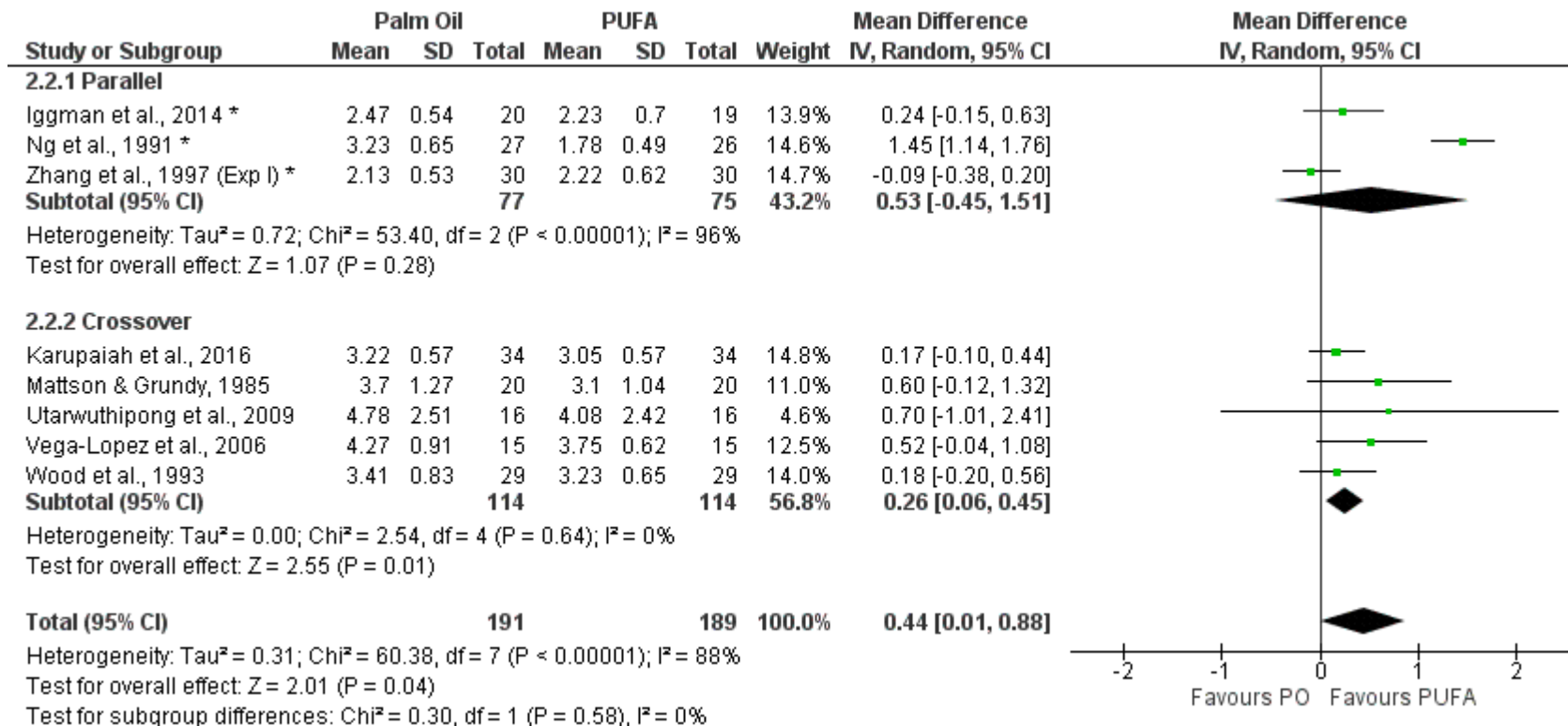
Supplementary figure 7. Summary plot for the effect of palm oil rich diet and MUFA rich diet on Apo A1. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and MUFA rich diet on Apo A1. Analyses conducted by random effects model.



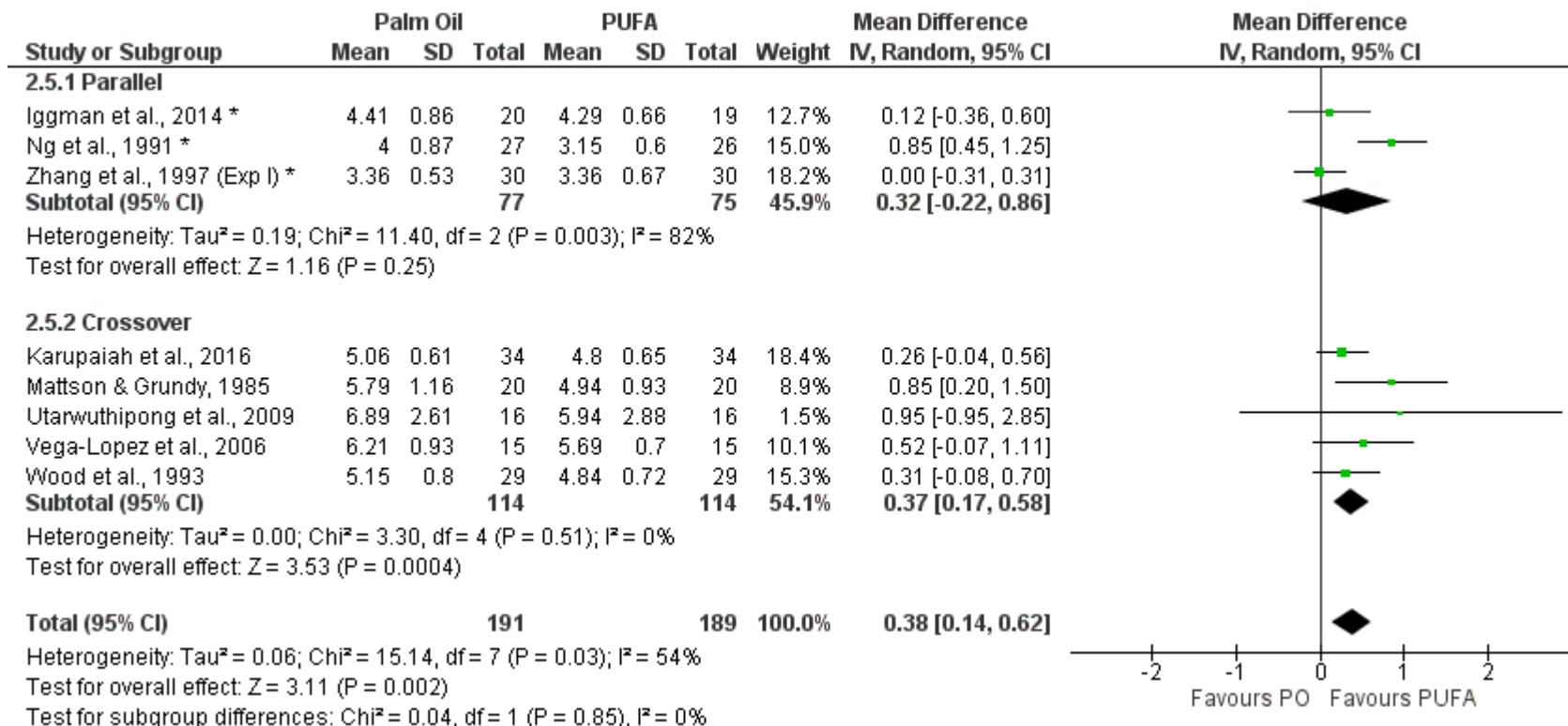
Supplementary figure 8. Summary plot for the effect of palm oil rich diet and MUFA rich diet on Apo B. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and MUFA rich diet on Apo B. Analyses conducted by random effects model.



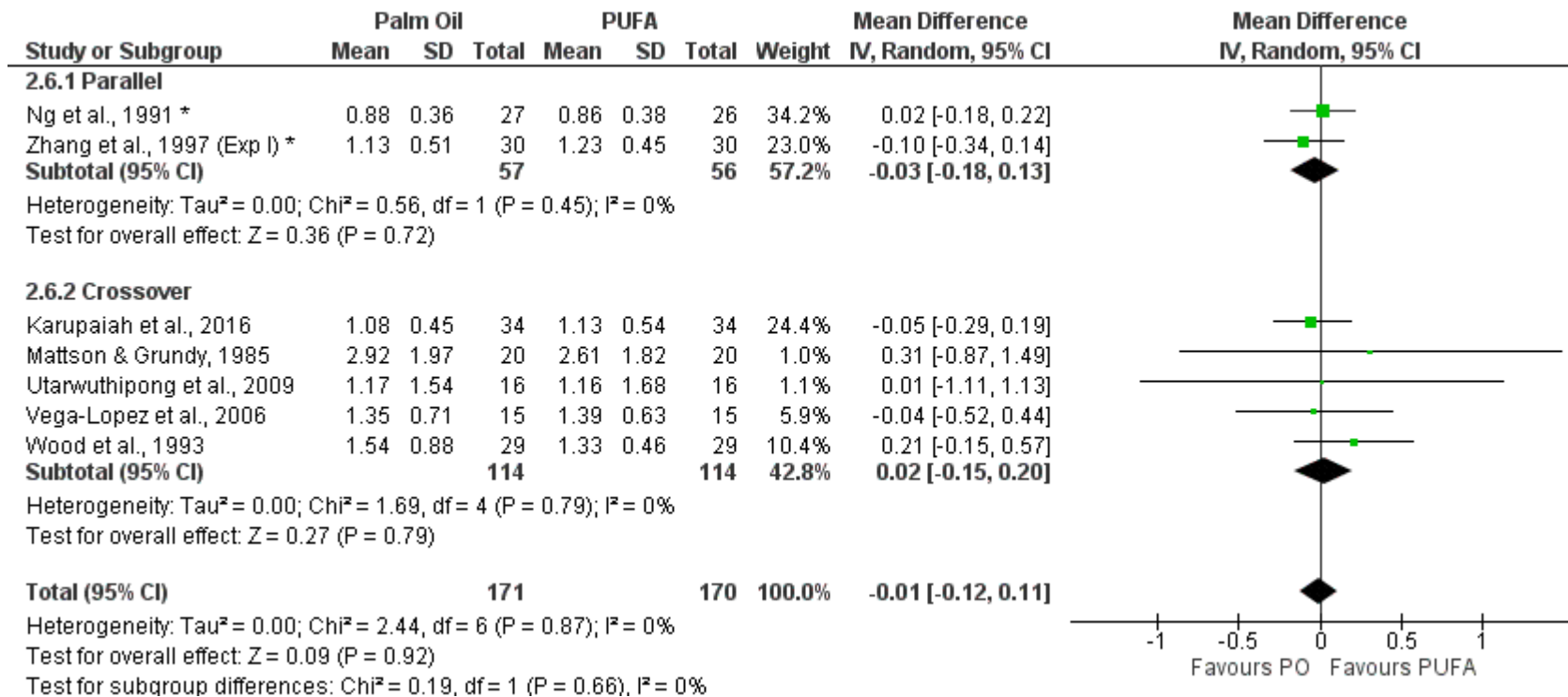
Supplementary figure 9. Summary plot for the effect of palm oil rich diet and PUFA rich diet on HDL-C. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and PUFA rich diet on HDL-C. Analyses conducted by random effects model.



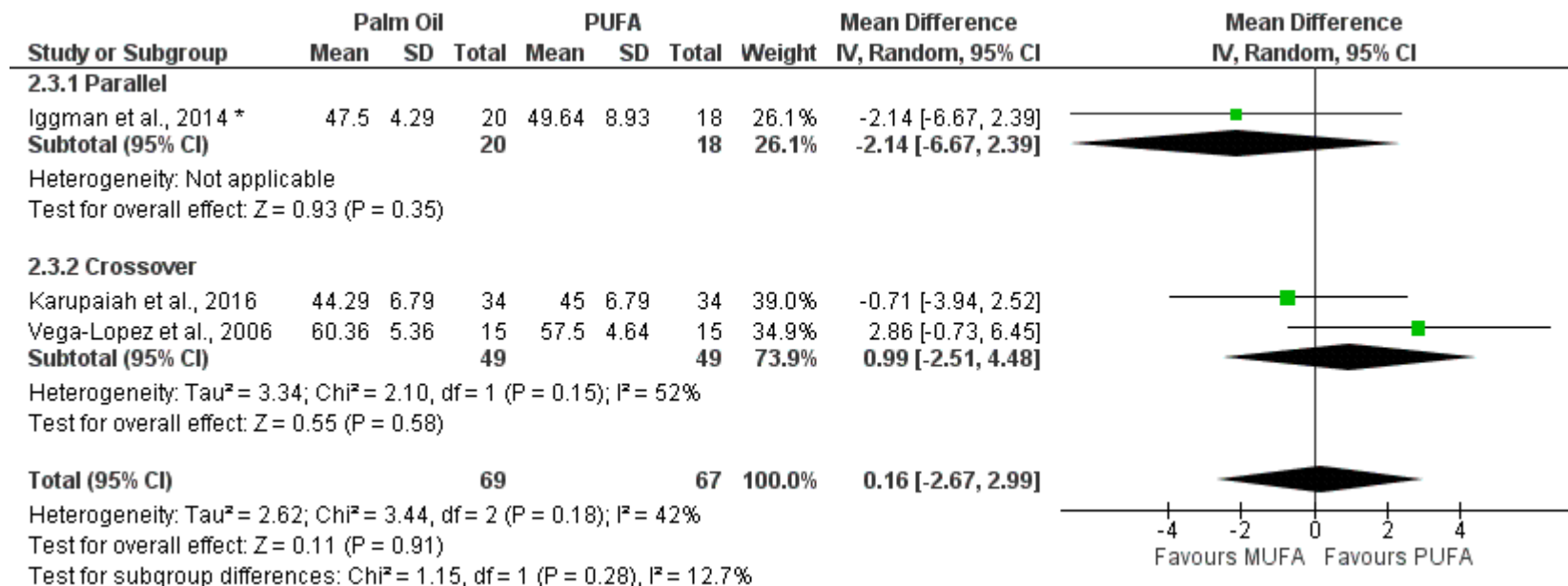
Supplementary figure 10. Summary plot for the effect of palm oil rich diet and PUFA rich diet on LDL-C. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and PUFA rich diet on LDL-C. Analyses conducted by random effects model.



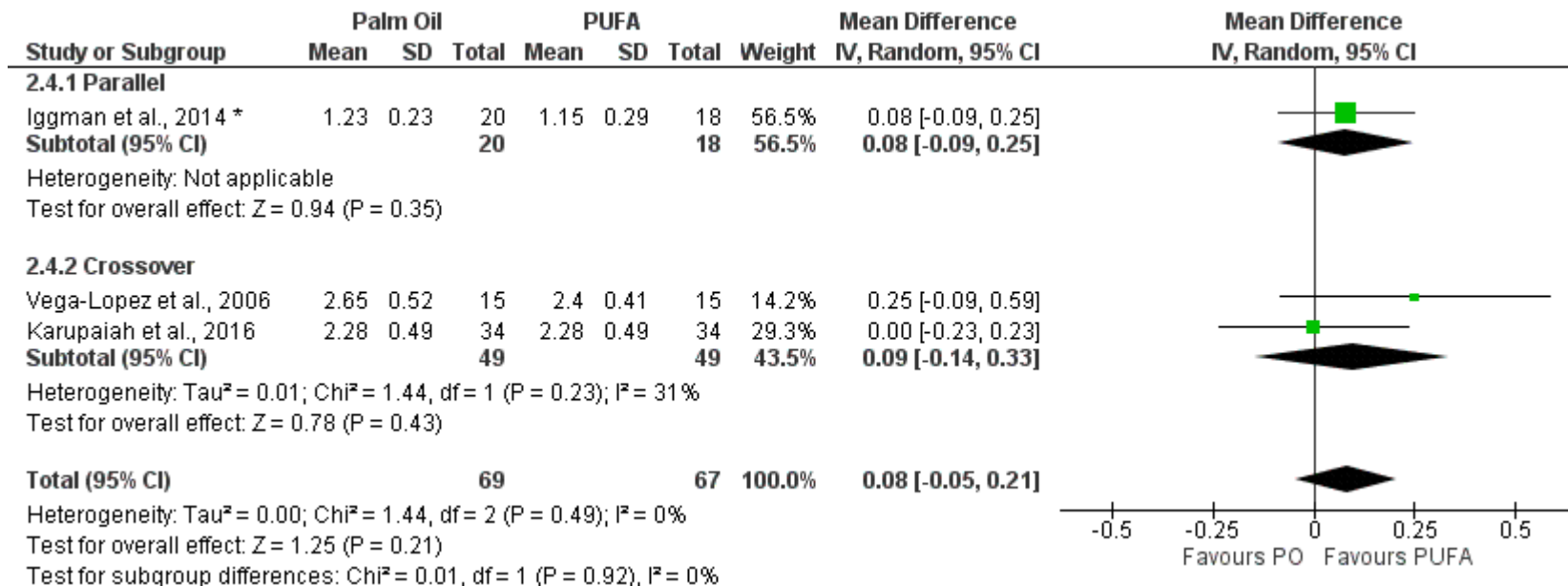
Supplementary figure 11. Summary plot for the effect of palm oil rich diet and PUFA rich diet on TC. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and PUFA rich diet on TC. Analyses conducted by random effects model.



Supplementary figure 12. Summary plot for the effect of palm oil rich diet and PUFA rich diet on TG. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and PUFA rich diet on TG. Analyses conducted by random effects model.



Supplementary figure 13. Summary plot for the effect of palm oil rich diet and PUFA rich diet on Apo-A1. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and PUFA rich diet on Apo-A1. Analyses conducted by random effects model.



Supplementary figure 14. Summary plot for the effect of palm oil rich diet and PUFA rich diet on Apo B. Data are weighted mean difference (95% confidence intervals) for summary effects of PO rich diet and PUFA rich diet on Apo B. Analyses conducted by random effects model.