

SUPPLEMENTARY TABLE S1. Fatty acids (FA) composition means (mol%) of olive oil (OO) and milk fat (MF), used for preparation of diets for hamsters.

FA	Fat			
	OO	MF	SEM	P ¹
MCSFA				
10:0	0.00340	11.25	3.248	0.000
12:0	0.00512	5.349	1.543	0.000
14:0	0.0124	12.80	3.693	0.000
15:0	0.00345	1.194	0.3436	0.000
Sum	0.0243	30.60	8.827	0.000
LCSFA				
16:0	12.50	26.59	4.056	0.000
17:0	0.0172	0.6699	0.1884	0.000
18:0	3.210	11.53	2.403	0.000
20:0	0.151	0.2679	0.03599	0.063
21:0	0.00382	0.0709	0.01936	0.000
22:0	0.0350	0.1015	0.01942	0.011
24:0	0.0141	0.0497	0.01034	0.006
26:0	0.0195	0.0007	0.00552	0.012
Sum	15.95	39.29	6.725	0.000
BCFA				
<i>iso</i> 14:0	0.000547	0.2293	0.006603	0.000
<i>iso</i> 15:0	0.00112	0.4252	0.1224	0.000
<i>anteiso</i> 15:0	nd	0.7411	0.2139	0.000
<i>iso</i> 16:0	0.00350	0.3781	0.1081	0.000
<i>iso</i> 17:0	nd	0.4426	0.2556	0.000
<i>anteiso</i> 17:0	0.07740	0.4755	0.2300	0.000
Sum	0.08262	2.692	0.7532	0.000
c-MUFA				
<i>cis</i> 9-14:1	nd	0.2111	0.06163	0.011
<i>cis</i> 9-16:1	0.802	0.7850	0.01778	0.725
<i>cis</i> 10-17:1	0.0681	0.2284	0.04630	0.001
<i>cis</i> 6-18:1	nd	0.0905	0.02613	0.000
<i>cis</i> 9-18:1	73.9	18.70	15.94	0.000
<i>cis</i> 11-18:1	2.02	0.3748	0.4758	0.001
<i>cis</i> 11-20:1	0.0711	0.0343	0.01200	0.113
<i>cis</i> 13-22:1	0.00291	0.0002	0.00080	0.018
Sum	76.9	20.43	16.29	0.000
t-MUFA				
<i>trans</i> 10-15:1	nd	nd		
<i>trans</i> 9-16:1	nd	0.01631	0.0471	0.000
<i>trans</i> 9-18:1	0.0109	0.2834	0.07869	0.000
<i>trans</i> 11-18:1	0.00136	2.2312	0.6437	0.000
Sum	0.0122	2.531	0.7271	0.000
PUFA				
18:2n-6	6.067	1.878	1.210	0.001
18:3n-6	0.00189	0.07308	0.02059	0.002
18:3n-3	0.642	1.133	0.1426	0.001
20:4 n-6	0.292	0.07201	0.06664	0.047
20:5 n-3	nd	0.1051	0.03051	
22:6 n-3	nd	nd		
Sum PUFAn-6	6.360	2.023	1.254	0.001
Sum PUFAn-3	0.642	1.238	0.1730	0.005
Sum PUFA	7.00	3.264	1.081	0.001
n-6/n-3	9.923	1.636	2.396	0.001
CLA				
<i>c9,t11</i> -CLA	0.00228	1.174	0.3383	0.000
<i>t10,c12</i> -CLA	0.00157	nd	0.00079	0.465
<i>c9,c11</i> -CLA	0.00298	0.00215	0.00124	0.927
<i>t9,t11</i> -CLA	0.00210	0.00540	0.00098	0.011
Sum	0.00894	1.182	0.3386	0.000

BCFA: methyl-branched chain FA. CLA: conjugated linoleic acid. c-MUFA: *cis*-monounsaturated FA; LCSFA: long chain saturated FA; MCSFA: medium chain saturated FA; nd: not detected; SFA: saturated FA. SCD-1: Stearoyl-CoA-1 desaturase. t-MUFA: *trans*-monounsaturated FA.

SUPPLEMENTARY TABLE S2. Sequences of primers used in hepatic gene expression analysis

Gene	Exons	Primer Sequences	mT (° C)	Lenght, pb	Accession No	Ref.
β-actin	Exon 4	Forward (3'→ 5')	60	81	NW_004801699	
	Exon 4-5	Reverse (5'→3')				
PPAR-α	Exon 6	Forward (3'→ 5')	55	180	NW_004801613	Vaille et al. ¹
	Exon 6 - Exon 7	Reverse (5'→3')				
SR-B1	Exon 6 - Exon 7	Forward (3'→ 5')	55	129	NW_004801705	
	Exon 7	Reverse (5'→3')				
ACAT	Exon 10 - Exon 11	Forward (3'→ 5')	55	101	NW_004801613	
	Exon 11	Reverse (5'→3')				
MTP	Exon 12	Forward (3'→ 5')	60	101	NW_004801723	Lecker et al. ²
	Exon 13	Reverse (5'→3')				
HMG-CoAR	Exon 14	Forward (3'→ 5')	55	81	NW_004801607	Huang et al. ³
	Exon 15	Reverse (5'→3')				
CD36	Exon 9 - Exon 10	Forward (3'→ 5')	55	96	NW_004801709	
	Exon 10 - Exon 11	Reverse (5'→3')				
LXR	Exon 3	Forward (3'→ 5')	60	181	NW_004801605	
	Exon 4	Reverse (5'→3')				
ApoB 100	Exon 25	Forward (3'→ 5')	65	278	NW_004801692	
	Exon 26	Reverse (5'→3')				
LDLR	Exon 10-11	Forward (3'→ 5')	55	115	NW_004801687	
	Exon 11	Reverse (5'→3')				
ApoA 1	Exon 2	Forward (3'→ 5')	62	182	NW_004801622	
	Exon 3 - 4	Reverse (5'→3')				

ACAT: acyl-CoA: cholesterol acyltransferase; CD36: cluster of differentiation 36; HMG-CoAR: hydroxymethylglutaryl-CoA reductase; LDLR: LDL-receptor; LXR: liver X receptor MTP: microsomal triglyceride transfer protein; PPAR-α: peroxisome proliferator-activated receptor α, SR-B1: HDL scavenger receptor BI.

- ¹. [49] Vaille, K.; Férézou, J.; Amsler, G.; Quignard-Boulangé, A.; Parquet, M.; Grippo, D.; Dorovska-Taran, V.; Martin, J.C. A *cis-9,trans-11*-conjugated linoleic acid-rich oil reduces the outcome of atherogenic process in hyperlipidemic hamster. *Am J Physiol Heart Circ Physiol* **2005**, 289, H652-H659, DOI <https://doi.org/10.1152/ajpheart.00130.2005>.
- ². [60] Lecker, J.L.; Matthan, N.R.; Billheimer, J.T.; Rader, D.J.; Lichtenstein, A.H. Impact of dietary fat type within the context of altered cholesterol homeostasis on cholesterol and lipoprotein metabolism in the F1B hamster. *Metab Clin Exp* **2010**, 59, 1491-1501, DOI <https://doi.org/10.1016/j.metabol.2010.01.014>.
- ³. [61] Huang, H.; Xie, Z.; Yokoyama, W.; Yu, L.; Wang, T.T.Y. Identification of liver CYP51 as a gene responsive to circulating cholesterol in a hamster model. *J Nutr Sci* **2016**, 5,e16. DOI 10.1017/jns.2016.

SUPPLEMENTARY TABLE S3. Fatty acids (FA) concentration (μmol/L) means (SD) in hamsters plasma.

FA	Hamster groups				
	OO7 ¹	OO21 ²	MF7 ³	MF21 ⁴	P ⁵
MCSFA					
10:0	26.16 (1.712)	26.06 (1.706)	24.56 (1.772)	30.44 (1.993)	0.108
12:0	10.49 (0.8158) ^a	13.48 (1.048) ^a	15.45 (1.350) ^a	46.22 (3.595) ^b	0.000
14:0	25.07 (7.644) ^a	31.75 (9.681) ^a	37.16 (19.92) ^a	218.1 (33.24) ^b	0.002
15:0	7.428 (0.6782) ^{a,b}	6.370 (0.5816) ^{a,b}	5.320 (0.558) ^b	12.36 (1.129) ^c	0.003
Sum	69.14 (10.85) ^a	77.65 (13.02) ^a	82.49 (23.60) ^a	307.2 (39.96) ^b	0.002
LCSFA					
16:0	1634 (107.1) ^{a,b}	2032 (283.4) ^b	1204 (251.1) ^a	3480 (167.2) ^c	0.002
17:0	32.12 (5.460) ^a	35.15 (5.975) ^a	25.74 (5.760) ^a	74.14 (12.60) ^b	0.012
18:0	631.4 (103.4) ^a	997.9 (131.2) ^b	371.5 (64.84) ^a	1010.7 (72.62) ^b	0.007
20:0	3.423 (0.4626) ^a	5.651 (0.7638) ^a	3.651 (0.610) ^a	9.691 (1.310) ^b	0.005
21:0	2.384 (0.4493)	2.644 (0.4981)	1.287 (0.3307)	2.770 (0.5219)	0.094
22:0	38.53 (11.62) ^{a,b}	63.52 (19.15) ^b	10.06 (5.290) ^a	37.18 (11.21) ^{a,b}	0.061
24:0	1.027 (0.5416)	1.254 (0.6613)	0.590 (0.297)	2.035 (1.073)	0.346
26:0	4.094 (0.5860) ^a	6.385 (0.9140) ^a	9.039 (1.622) ^a	57.07 (8.169) ^b	0.001
Sum	2347 (229.6) ^{a,b}	3145 (442.6) ^b	1626 (329.8) ^a	4674 (274.7) ^b	0.003
BCFA					
iso14:0	1.047 (0.1607)	1.060 (0.1626)	0.9144 (0.1792)	1.147 (0.1760)	0.626
anteiso14:0	1.382 (0.4150)	1.738 (0.5220)	1.119 (0.5841)	2.060 (0.6185)	0.429
iso15:0	4.999 (1.503) ^b	2.161 (0.6497) ^{a,b}	0.797 (0.417) ^a	2.446 (0.7354) ^{a,b}	0.043
anteiso15:0	1.430 (0.4573)	3.176 (1.016)	1.811 (1.057)	5.906 (1.889)	0.066
iso16:0	5.267 (0.9478) ^a	5.755 (1.036) ^a	6.242 (1.507) ^a	18.21 (3.277) ^b	0.007
anteiso16:0	0.5306 (0.1555) ^a	nd	nd	0.4754 (0.1393) ^a	0.011
iso17:0	33.22 (8.726) ^a	21.87 (5.745) ^a	31.07 (12.98) ^a	145.6 (38.25) ^b	0.011
anteiso17:0	37.49 (8.155) ^{a,b}	69.26 (15.07) ^b	6.628 (2.083) ^a	35.05 (7.626) ^{a,b}	0.013
Sum	85.36 (20.52) ^a	105.0 (24.20) ^{a,b}	48.58 (18.81) ^a	210.9 (52.71) ^b	0.028
c-MUFA					
cis9-14:1	29.03 (5.745) ^a	37.71 (7.463) ^a	31.02 (8.525) ^a	109.1 (21.59) ^b	0.008
cis9-16:1	130.7 (26.27) ^a	84.20 (34.41) ^a	141.8 (30.13) ^a	365.6 (63.94) ^b	0.008
cis10-17:1	11.87 (1.426) ^a	6.592 (0.7915) ^a	20.99 (3.036) ^a	60.89 (7.311) ^b	0.001
cis6-18:1	nd	nd	5.886 (2.101) ^a	13.05 (3.096) ^b	0.006
cis9-18:1	2089 (152.4) ^a	3226 (313.6) ^b	1309 (105.7) ^a	3481.8 (506.5) ^b	0.007
cis11-18:1	180.9 (32.12)	173.6 (30.83)	94.25 (22.35)	173.5 (30.81)	0.110
cis11-20:1	12.40 (3.706)	21.22 (6.343)	4.306 (2.229)	16.17 (4.832)	0.078
cis13-22:1	3.661 (0.8913)	4.228 (1.028)	2.078 (0.7703)	3.937 (0.9576)	0.231
Sum	2457 (222.6) ^{a,b}	3554 (394.5) ^{b,c}	1610 (174.82) ^a	4224 (639.1) ^c	0.010
t-MUFA					
trans10-15:1	0.9801 (0.1777) ^a	nd	nd	1.648 (0.2989) ^b	0.002
trans9-16:1	2.271 (0.5338) ^a	1.693 (0.3980) ^a	13.43 (4.730) ^b	2.664 (0.6263) ^a	0.021
trans9-18:1	6.571 (2.233)	9.321 (3.168)	3.732 (2.443)	19.08 (6.485)	0.064
trans11-18:1	4.848 (1.185) ^a	4.797 (1.172) ^a	8.299 (3.100) ^a	42.60 (10.41) ^b	0.006
Sum	14.67 (4.130) ^a	15.81 (4.739) ^a	25.46 (10.27) ^a	65.99 (17.82) ^b	0.025
PUFA					
18:2 n-6	2249 (450.2) ^a	1933 (144.2) ^a	1738 (231.4) ^a	4162 (104.7) ^b	0.003
18:3 n-6	81.19 (17.71) ^{ab}	107.0 (23.34) ^b	21.33 (6.730) ^a	48.71 (10.63) ^{ab}	0.021
18:3 n-3	6.754 (1.801) ^a	10.90 (2.905) ^a	8.585 (3.674) ^a	69.68 (18.58) ^b	0.007
20:4 n-6	1146 (168.6) ^a	1320 (194.1) ^{ab}	699.0 (129.7) ^a	1907 (217.0) ^b	0.012
20:5 n-3	6.081 (0.7177) ^a	7.291 (0.8606) ^a	12.03 (1.704) ^a	81.99 (9.677) ^b	0.000
22:6 n-3	229.0 (48.70) ^a	482.1 (42.42) ^b	150.6 (45.78) ^a	640.7 (76.14) ^b	0.003
Sum n-6	3477 (636.5) ^a	3361 (361.6) ^a	2459 (367.8) ^a	6118 (332.3) ^b	0.005
Sum n-3	241.9 (51.21) ^a	500.3 (46.18) ^b	171.2 (51.16) ^a	792.4 (104.4) ^c	0.003
Sum PUFA	3719 (687.8) ^a	3860 (407.8) ^a	2630 (419.0) ^a	6910 (436.7) ^b	0.004
n-6/n-3	14.42 (0.4219) ^b	6.713 (0.1031) ^a	14.70 (2.244) ^b	7.761 (0.6030) ^a	0.004
CLA					
cis9, trans11-CLA	4.525 (1.713) ^a	3.965 (1.501) ^a	19.80 (16.12) ^a	191.1 (72.311) ^b	0.018
trans10, cis12-CLA	3.125 (0.7917)	3.095 (0.7841)	1.800 (0.7108)	3.004 (0.7612)	0.364
cis9, cis11-CLA	7.272 (1.585) ^a	12.37 (2.695) ^a	7.392 (2.328) ^a	26.42 (5.757) ^b	0.015
trans9, trans11-CLA	2.664 (0.8641) ^a	3.037 (0.9852) ^a	1.992 (1.194) ^a	14.48 (4.697) ^b	0.020
Sum	17.59 (4.953) ^a	22.47 (5.965) ^a	30.98 (20.35) ^a	235.0 (83.53) ^b	0.018
Total FA	8711 (1180) ^a	10781 (1293) ^a	6059 (999.4) ^a	16627 (1544) ^b	0.005
SCD1 activity indices					
cis9-16:1/16:0	0.0796 (0.01086) ^b	0.0406(0.01126) ^a	0.1177(0.00048) ^b	0.1047(0.01334) ^b	0.006
cis9-18:1/18:0	3.334 (0.3043)	3.241(0.1119)	3.555(0.3060)	3.4360(0.2543)	0.396
c9,t11CLA/t11C18:1	0.9175 (0.1290) ^a	0.8126(0.1142) ^a	2.174(1.130) ^a	4.409(0.6198) ^b	0.015

¹Hamsters fed a diet containing 7% (w) of olive oil. ²Hamsters fed a diet containing 21% (w) of olive oil. ³Hamsters fed a diet containing 7% (w) of milk fat. ⁴Hamsters fed a diet containing 21% (w) of milk fat. ⁵ P-value < 0.05 was considered statistical significance. ^{a, b, c} letters indicate significant differences in compared groups. BCFA: methyl-branched chain FA; CLA: conjugated linoleic acid; c-MUFA: cis-monounsaturated FA; LCSFA: long chain saturated FA; MCSFA: medium chain saturated FA; nd: not detected; SFA: saturated FA; SCD-1: Stearoyl-CoA-1 desaturase. t-MUFA: trans-monounsaturated FA.