

Supplemental Material

Supplemental table 1: Diet composition (D17041407, -09)

Product #	D17041407		D17041409	
	Low Fat (20 kcal %)		High Fat (60 kcal %)	
Ingredient	(g)		(g)	
Casein	220		220	
Cystine	3		3	
Corn Starch	368		67	
Maltodextrin 10	122.2		22.3	
Sucrose	107.078		107.078	
Cellulose	50		50	
Soybean Oil	90		90	
Lard	0		178.4	
t-butylhydroquinone	0.014		0.014	
Mineral Mix S10022C	3.5		3.5	
Calcium Carbonate	12.495		12.495	
Potassium Citrate, 1 H₂O	1.773		1.773	
Potassium Phosphate, monobasic	7.763		7.763	
Sodium Chloride	2.59		2.59	
Vitamin Mix V10037	10		10	
Choline Bitartrate	2.5		2.5	
FD&C Yellow Dye #5	0.05		0	
FD&C Red Dye #40	0		0.025	
FD&C Blue Dye #1	0		0.025	
Total	1000.96		778.463	
kcal/gm	4		5.2	
	gram	gram%	gram	gram%
Protein	197	20	197	25
Carbohydrate	607	61	206	27
Fat	90	9	268	34
Fiber	50	5	50	6
	kcal	kcal%	kcal	kcal%
Protein	786	20	786	20
Carbohydrate	2429	60	826	20
Fat	810	20	2416	60
Total	4026	100	4028	100
	gram	gram%	gram	gram%
Calcium	5	0.5	5	0.64
Phosphorus	3.53	0.35	3.53	0.45
Potassium	3.6	0.36	3.6	0.46
	Typical Amino Acids (g)			
	per kg diet	per 1000 kcal	per kg diet	per 1000 kcal
Essential Amino Acids				

Histidine	4.95	1.23	6.36	1.23
Isoleucine	8.24	2.05	10.6	2.05
Leucine	17.25	4.29	22.18	4.29
Lysine	14.29	3.55	18.37	3.55
Methionine	5.49	1.37	7.07	1.37
Phenylalanine	9.12	2.27	11.73	2.27
Threonine	7.8	1.94	10.03	1.94
Tryptophan	2.31	0.57	2.97	0.57
Valine	10.11	2.51	13	2.51
<i>Non-Essential Amino Acids</i>				
Alanine	5.49	1.37	7.07	1.37
Arginine	6.48	1.61	8.34	1.61
Asparagine	7.69	1.91	9.89	1.91
Aspartate	5.49	1.37	7.07	1.37
Cystine	4.32	1.07	4.7	1.07
Glutamine	18.68	4.65	24.02	4.64
Glutamate	22.75	5.66	29.25	5.65
Glycine	3.3	0.82	4.24	0.82
Proline	19.34	4.81	24.87	4.81
Serine	10.88	2.71	13.99	2.7
Tyrosine	9.89	2.46	12.72	2.46

Supplemental table 2: Lipids that are changed by a HFD in either old or young mice.

Lipid name	Detailed composition	Significant result LFD vs HFD	Fold change	q-value
TG(54:1)	TG(18:0_18:0_18:1)	old	7.7	0.0017
TG(41:1)		old	6.0	0.0258
23OH-C20:0-carnitine		old	5.7	0.0035
TG(52:0)	TG(16:0_18:0_18:0)	old	5.5	0.0017
C18:0-carnitine		old	4.9	0.0005
DG(36:1)	DG(18:0_18:1)	old	4.3	0.0025
TG(50:0)	TG(16:0_16:0_18:0)	old	4.1	0.0022
TG(53:1)	TG(17:0_18:0_18:1)	old	3.9	0.0137
C16:0-carnitine		old	3.8	0.0055
CL(72:8)	CL(18:2/18:2/18:2/18:2)	old	3.5	0.0129
TG(54:2)	TG(18:0_18:1_18:1)	old	3.4	0.0147
3OH-C18:1-carnitine		old	3.2	0.0297
TG(51:1)	TG(16:0_17:0_18:1)	old	2.9	0.0317
PC(40:4)	PC(18:0_22:4)	old	2.8	0.0033
TG(51:0)	TG(16:0_17:0_18:0)	old	2.7	0.0156
TG(59:2)		old	2.7	0.0499
DG(38:4)	DG(16:0_22:4)	old	2.7	0.0054
C14-carnitine		old	2.6	0.0352
PC(38:4)	PE(16:0_22:4)	old	2.6	0.0352
TG(42:0)	TG(12:0_14:0_16:0)	old	2.3	0.0240
PC(37:4)	PC(17:0_20:4)	old	2.2	0.0005
PC(37:3)		old	2.2	0.0189
PEp(40:5)/PEa(40:6)		young/old	2.2/1.9	0.0438/0.0129
PEa(40:5)/PEp(40:4)		young/old	2.1/2.2	0.0307/0.0021
SM(d36:2)		young/old	2.1/2.2	0.0264/0.0005
TG(49:0)	TG(16:0_16:0_17:0)	old	2.1	0.0475
SM(d34:2)		old	2.1	0.0119
PC(38:2)		old	2.1	0.0033
PC(38:3)	PC(18:0_20:3)	old	2.1	0.0116
DG(32:0)	DG(16:0/16:0)	old	2.0	0.0035
PC(39:5)		young/old	1.9/2.0	0.0198/0.0033
Cer(d36:1)	Cer(d18:1/18:0)	old	1.9	0.0033
DG(34:0)	DG(16:0_18:0)	old	1.9	0.0005
DG(35:2)		old	1.9	0.0309
PC(38:4)	PC(16:0_22:4)	young/old	1.8/2.6	0.0198/0.0001
PC(36:2)	PC(18:0_18:2)	old	1.8	0.0071
PC(35:2)	PC(17:0_18:2)	old	1.8	0.0021
PCa(38:4)/PCp(38:3)		old	1.8	0.0129
PC(38:4)	PC(18:0_20:4)	old	1.8	0.0035
PC(36:3)	PC(16:0_20:3)	old	1.8	0.0055
LPE(18:0)		old	1.8	0.0054

LPC(20:4)		old	1.8	0.0147
SM(d40:2)		old	1.8	0.0317
LPC(22:5)		old	1.7	0.0335
Cer(d40:1)	Cer(d18:1/22:0)	old	1.7	0.0156
LPC(18:0)		old	1.7	0.0182
PC(33:0)		old	1.7	0.0116
PC(36:4)	PC(16:0_20:4)	old	1.7	0.0054
PC(35:1)		young/old	1.6/1.8	0.0198/0.0035
PC(38:5)	PC(16:0_22:5) major	old	1.6	0.0220
PEp(38:4)/PEa(38:5)		old	1.6	0.0054
PEp(38:4)/PEa(38:5)		old	1.6	0.0303
PC(36:1)	PC(18:0_18:1)	old	1.6	0.0198
DG(38:6)	DG(16:0_22:6)	old	1.6	0.0208
PEp(38:5(OH))		young/old	1.5/1.7	0.0307/0.0035
SM(d35:1)		old	1.5	0.0116
DG(38:4)	DG(18:0_20:4)	old	1.5	0.0261
PC(34:2)	PC(16:0_18:2) major	old	1.5	0.0129
DG(33:2)		old	0.6	0.0137
PC(32:2)	PC(14:0_18:2)	young	0.5	0.0209
PC(34:4)		young/old	0.4/0.6	0.0198/0.0147
TG(59: 3)		old	0.4	0.0178

Supplemental table 3: Acylcarnitine composition in quadriceps (nmol * g tissue⁻¹)

Species	YOUNG				OLD			
	LFD		HFD		LFD		HFD	
	Mean	SEM	Mean	SEM	Mean	SEM	Mean	SEM
total	129.8	9.4	145.7	3.6	165.7	20.1	162.6	6.6
C0	56.5	4.2	67.6	2.3	71.4	8.5	73.0	3.4
C2*	57.0	5.2	63.8	4.4	81.1	10.7	72.4	4.7
C3	0.47	0.05	0.49	0.04	0.59	0.08	0.57	0.04
C4	0.85	0.11	0.86	0.05	0.89	0.11	1.02	0.06
C5	0.12	0.01	0.16	0.01	0.16	0.02	0.23	0.05
C6	0.24	0.03	0.29	0.01	0.25	0.03	0.31	0.01
C8	0.14	0.01	0.16	0.02	0.13	0.01	0.15	0.01
C10:1	0.03	0.01	0.02	0.00	0.02	0.01	0.02	0.00
C10	0.05	0.01	0.04	0.01	0.03	0.00	0.04	0.01
C12:1	0.03	0.01	0.02	0.00	0.02	0.01	0.02	0.00
C12	0.09	0.02	0.05	0.02	0.05	0.01	0.06	0.01
C14:1	0.28	0.07	0.17	0.04	0.21	0.04	0.22	0.05
C14	0.83	0.14	0.69	0.16	0.52	0.09	0.69	0.12
C16:1	0.84	0.16	0.47	0.11	0.66	0.14	0.59	0.14
C16	3.92	0.70	3.51	0.97	2.35	0.46	4.00	0.73
C18:2	1.05	0.23	0.54	0.13	0.83	0.18	0.81	0.21
C18:1	1.92	0.36	1.46	0.38	1.83	0.35	2.33	0.66
C18	1.03	0.18	1.22	0.30	0.78	0.15	1.49[#]	0.23
C12OH	0.07	0.01	0.10	0.01	0.10	0.04	0.14	0.02
C14OH	0.08	0.01	0.10	0.01	0.06	0.01	0.10	0.01
C16OH^{\$}	0.26	0.03	0.35	0.05	0.19	0.03	0.36^{&}	0.03
C18:1OH^{\$}	0.25	0.04	0.34	0.05	0.26	0.04	0.43[#]	0.05
C18OH^{\$}	0.09	0.01	0.14	0.03	0.08	0.01	0.17⁺	0.01

*p<0.05 for age and \$p<0.01 for diet, 2-way ANOVA. #p<0.05 for LFD vs HFD, old, &p<0.01 for LFD vs HFD, old, and +p<0.001 for LFD vs HFD, old.