Supplementary Material

Differentiated 4,4-dimethylsterols from vegetable oils reduce fat deposition dependent on fat-6 and fat-7 in *Caenorhabditis elegans*

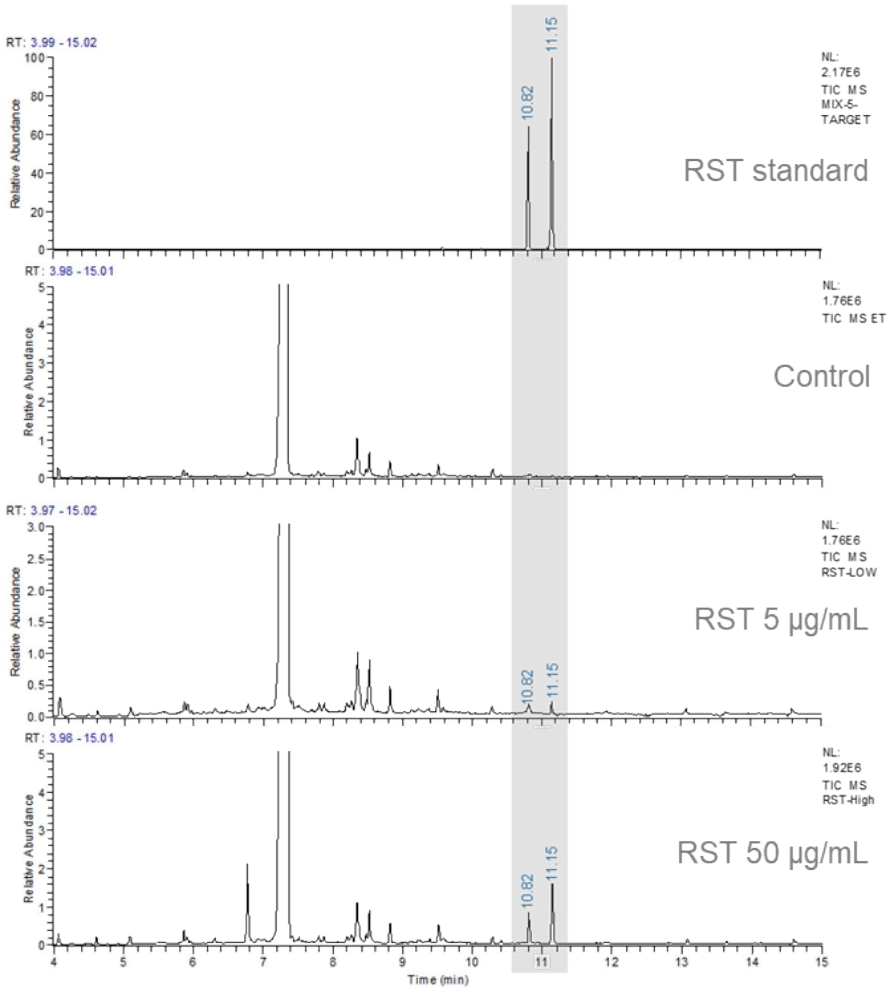
Tao Zhang, Liangliang Xie, Ruijie Liu, Ming Chang*, Qingzhe Jin, Xingguo Wang*

National Engineering Research Center for Functional Food, Collaborative Innovation Center of Food Safety and Quality Control in Jiangsu Province, School of Food Science and Technology, Jiangnan University, 1800 Lihu Road, Wuxi, Jiangsu, 214122 China

*Corresponding author address: School of Food Science and Technology, Jiangnan University, 1800 Lihu Road, Binhu District, Wuxi, Jiangsu, 214122, China.

Tel: +(86) 0510 85876799

E-mail address: chang@jiangnan.edu.cn (Ming Chang); wangxg1002@gmail.com (Xingguo Wang)



Supplementary Figure 1. Determination of the intake of 4,4-dimethylsterols in *C. elegans* by GC-MS.

Supplementary Table 1. Oil samples investigated in this study.

Number	Name	Group
1	Chia oil	5
2	Camellia oleifera oil	4
3	Sesame oil	5
4	Sea buckthorn oil	5
5	Rice bran oil	2
6	Corn oil	3
7	Linseed oil	5
8	Walnut oil	5
9	Cannabis oil	5
10	Safflower oil	5
11	Olive oil	5
12	Sunflower oil	5
13	Coconut oil	5
14	Corn germ oil	3
15	Soybean oil	5
16	Canola oil	5
17	Peanut oil	5
18	Palm oil	5
19	Poppy seed oil	5
20	Amygdalus pedunculata oil	5
21	Samara oil	5
22	Maple seed oil	5
23	Eucommia seed oil	5
24	Sacha inchi oil	5
25	Tea seed oil	4
26	Sumac fruit oil	5
27	Tomato seed oil	5
28	Silybum marianum oil	5
29	Peony seed oil	5
30	Shea nut butter	5
31	Swida wilsoniana oil	1
32	Suaeda salsa seed oil	5

Supplementary Table 2. Identified metabolites by using biomarker analysis (Control vs RST).

No.	Retention time (min)	Name	AUC	T-Test
1	28.61	Oleamide	1.00	3.56E-07
2	27.39	10-nonadecenoic acid	1.00	1.20E-04
3	29.11	Stearamide	0.97	7.35E-04
4	31.56	2-oleoylglycerol	1.00	0.001059
5	25.64	9-octadecenoic acid	1.00	0.001229
6	28.47	Linoleoyl amide	0.97	0.011499
7	25.87	cis-4-aminocyclohexanecarboxylic acid	1.00	0.011815
8	32.53	2-stearylglycerol	0.93	0.011995
9	22.16	Dodecanoic acid	0.97	0.012282
10	24.04	9E-heptadecenoic acid	1.00	0.017424
11	22.09	Palmitoleic acid	0.90	0.021421
12	9.45	L-threonine	0.90	0.021876
13	24.09	1-monoacylglycerol	0.93	0.022954
14	23.71	Heptadecanoic acid	0.87	0.025855
15	25.39	9,12-octadecadienoic acid	0.97	0.027724
16	20.75	d-glucose	0.93	0.031043
17	29.18	arachidic acid	0.83	0.031826
18	34.40	1-monostearate	0.87	0.03189
19	21.01	d-mannose	0.87	0.034252
20	17.02	DL-ornithine	0.90	0.034307
21	10.76	3-aminoisobutyric acid	0.83	0.035397
22	32.93	batyl alcohol	0.87	0.036006
23	22.62	palmitic acid	0.87	0.038419
24	17.30	adonitol	0.83	0.04082
25	31.23	2-palmitoylglycerol	0.83	0.045295
26	17.18	arabinitol	0.87	0.045933
27	14.17	2-propenoic acid phosphate	0.87	0.047391
28	11.92	N-acetylmethionine	0.77	0.047978
29	11.88	3-ureidopropionic acid	0.87	0.048

Supplementary Table 3. Identified metabolites by using biomarker analysis (Control vs SST).

No.	Retention time (min)	Name	AUC	T-Test
1	8.44	Nonanoic acid	1.00	5.32E-04
2	13.38	Citrulline	1.00	0.0045727
3	11.9	4-Ureidobutanoic acid	1.00	0.0094422
4	13.67	Pentanedioic acid	0.96	0.013851
5	11.19	2-Aminomalonic acid	0.96	0.01435
6	12.46	2,6-Bis(tert-butyl)phenol	0.92	0.020917
7	12	L-Methionine	0.92	0.021673
8	12.37	L-Glutamic acid	0.84	0.022629
9	15.65	Pyrophosphate	0.92	0.026058
10	9.94	L-Aspartic acid	0.92	0.026298
11	14.12	2-Propenoic acid-P	0.80	0.030529
12	11.74	Malic acid	0.88	0.030992
13	18.63	L-Ornithine	0.88	0.033261
14	14.59	L-Glutamic acid	0.84	0.034635
15	16.82	Putrescine	0.96	0.035807
17	14.42	2-Aminoadipic acid	0.88	0.040017
18	9.46	L-Threonine	0.96	0.040472
19	13.57	Phosphoethanolamine	0.88	0.040563
20	7.31	L-Isoleucine	0.76	0.042887
21	11.99	L-5-Oxoproline	0.84	0.046035
22	10.1	beta-Alanine	0.84	0.046679