

### **Supplementary tables**

**Table S1.** Effects of interventions and variables' changes on risk factors and serum sirtuin-1 (full model).

**Table S2.** HDL particle's lipid composition and cholesterol transfer (full model).

**Table S3.** HDL particle's antioxidant capacity (full model).

**Table S1.** Effects of interventions and variables' changes on risk factors and serum sirtuin-1 (full model).

Variables	R <sup>2</sup>	Full Model			
		$\beta$	95% CI for $\beta$		p-value
			Lower	Upper	
<i>Serum sirtuin-1</i>	0.341				
Constant		-29.798	-86.330	26.735	0.289
BMI, kg/m <sup>2</sup>		34.537	-5.073	74.147	0.085
Serum HDL-c, mg/dL		-1.084	-6.795	4.628	0.701
Serum LDL-c, mg/dL		0.133	-0.682	0.948	0.741
Serum triglycerides, mg/dL		0.139	-0.419	0.697	0.613
Serum glucose, mg/dL		2.166	0.070	4.262	<b>0.043</b>
Energy restriction		63.882	-22.267	150.031	0.140
Atorvastatin		3.920	-93.872	101.712	0.935
<i>Serum LDL-c</i>	0.428				
Constant		1.999	-25.338	29.335	0.882
Serum sirtuin-1, pg/mL		0.030	-0.153	0.213	0.741
BMI, kg/m <sup>2</sup>		-7.612	-27.207	11.982	0.433
Serum HDL-c, mg/dL		-0.035	-2.750	2.679	0.979
Serum triglycerides, mg/dL		0.193	-0.062	0.448	0.133
Serum glucose, mg/dL		0.034	-1.036	1.104	0.949
Energy restriction		-24.570	-65.973	16.834	0.234
Atorvastatin		-53.835	-95.244	-12.427	<b>0.013</b>
<i>Serum HDL-c</i>	0.290				
Constant		-1.232	-5.102	2.639	0.520
Serum sirtuin-1, pg/mL		-0.005	-0.031	0.021	0.701
BMI, kg/m <sup>2</sup>		0.286	-2.538	3.109	0.837
Serum LDL-c, mg/dL		-0.001	-0.056	0.054	0.979
Serum triglycerides, mg/dL		-0.036	-0.071	-0.001	<b>0.045</b>
Serum glucose, mg/dL		0.104	-0.043	0.251	0.158
Energy restriction		-1.873	-7.888	4.142	0.529
Atorvastatin		1.557	-5.027	8.140	0.632
<i>Serum triglycerides</i>	0.450				
Constant		24.572	-14.100	63.245	0.204
Serum sirtuin-1, pg/mL		0.066	-0.200	0.332	0.613
BMI, kg/m <sup>2</sup>		1.829	-27.019	30.676	0.898
Serum HDL-c, mg/dL		-3.757	-7.433	-0.082	<b>0.045</b>
Serum LDL-c, mg/dL		0.409	-0.132	0.950	0.133
Serum glucose, mg/dL		0.315	-1.239	1.869	0.681
Energy restriction		-49.066	-107.944	9.812	0.099
Atorvastatin		-37.427	-103.363	28.509	0.255
<i>Serum glucose</i>	0.242				
Constant		1.778	-8.090	11.646	0.715
Serum sirtuin-1, pg/mL		0.064	0.002	0.125	<b>0.043</b>
BMI, kg/m <sup>2</sup>		-0.497	-7.662	6.668	0.888
Serum HDL-c, mg/dL		0.671	-0.276	1.618	0.158
Serum LDL-c, mg/dL		0.004	-0.136	0.144	0.949
Serum triglycerides, mg/dL		0.019	-0.076	0.115	0.681
Energy restriction		-1.455	-16.811	13.901	0.847
Atorvastatin		-4.664	-21.334	12.007	0.571
<i>BMI</i>	0.321				
Constant		0.530	0.037	1.023	<b>0.036</b>
Serum sirtuin-1, pg/mL		0.003	0.000	0.006	0.085
Serum HDL-c, mg/dL		0.005	-0.048	0.058	0.837
Serum LDL-c, mg/dL		-0.003	-0.010	0.005	0.433
Serum triglycerides, mg/dL		0.000	-0.005	0.006	0.898
Serum glucose, mg/dL		-0.001	-0.022	0.019	0.888
Energy restriction		-1.046	-1.770	-0.321	<b>0.006</b>
Atorvastatin		-0.586	-1.463	0.291	0.182

**Table S2.** HDL particle's lipid composition and cholesterol transfer (full model).

Variables	R <sup>2</sup>	Full Model			
		β	95% CI for β		p-value
			Lower	Upper	
<i>Esterified cholesterol transfer</i>	0.381				
Constant		-0.084	-0.517	0.349	0.694
Serum sirtuin-1, pg/mL		0.001	-0.002	0.004	0.581
BMI, kg/m <sup>2</sup>		0.067	-0.246	0.381	0.663
Serum HDL-c, mg/dL		0.042	-0.001	0.085	0.056
Serum LDL-c, mg/dL		0.002	-0.005	0.008	0.599
Serum triglycerides, mg/dL		0.005	0.001	0.009	<b>0.017</b>
Serum glucose, mg/dL		-0.002	-0.019	0.015	0.844
Energy restriction		-0.180	-0.852	0.493	0.588
Atorvastatin		0.061	-0.673	0.794	0.867
<i>Free cholesterol transfer</i>	0.315				
Constant		0.055	-0.642	0.751	0.873
Serum sirtuin-1, pg/mL		0.001	-0.003	0.006	0.558
BMI, kg/m <sup>2</sup>		0.122	-0.383	0.627	0.623
Serum HDL-c, mg/dL		0.071	0.002	0.140	<b>0.045</b>
Serum LDL-c, mg/dL		0.000	-0.010	0.010	0.967
Serum triglycerides, mg/dL		0.006	-0.001	0.012	0.095
Serum glucose, mg/dL		0.003	-0.024	0.030	0.818
Energy restriction		-0.402	-1.484	0.681	0.453
Atorvastatin		-0.090	-1.271	1.091	0.877
<i>HDL particle's free cholesterol</i>	0.236				
Constant		-0.607	-1.805	0.591	0.308
Serum sirtuin-1, pg/mL		-0.001	-0.009	0.007	0.827
BMI, kg/m <sup>2</sup>		0.921	0.053	1.789	<b>0.038</b>
Serum HDL-c, mg/dL		-0.082	-0.201	0.037	0.169
Serum LDL-c, mg/dL		0.008	-0.009	0.025	0.317
Serum triglycerides, mg/dL		-0.005	-0.017	0.006	0.348
Serum glucose, mg/dL		-0.003	-0.050	0.044	0.901
Energy restriction		1.378	-0.483	3.239	0.140
Atorvastatin		1.051	-0.979	3.082	0.298
<i>HDL particle's esterified cholesterol</i>	0.217				
Constant		0.569	-14.059	15.198	0.937
Serum sirtuin-1, pg/mL		0.071	-0.027	0.170	0.147
BMI, kg/m <sup>2</sup>		-9.366	-19.966	1.233	0.081
Serum HDL-c, mg/dL		0.266	-1.186	1.718	0.710
Serum LDL-c, mg/dL		-0.075	-0.282	0.132	0.464
Serum triglycerides, mg/dL		-0.039	-0.181	0.103	0.579
Serum glucose, mg/dL		0.157	-0.415	0.729	0.578
Energy restriction		-5.612	-28.336	17.112	0.616
Atorvastatin		-4.196	-28.993	20.601	0.731
<i>HDL particle's phospholipids</i>	0.254				
Constant		-1.165	-13.526	11.195	0.848
Serum sirtuin-1, pg/mL		-0.078	-0.161	0.005	0.065

BMI, kg/m <sup>2</sup>	8.057	-0.899	17.013	0.076
Serum HDL-c, mg/dL	-0.254	-1.481	0.973	0.674
Serum LDL-c, mg/dL	0.064	-0.111	0.239	0.462
Serum triglycerides, mg/dL	0.029	-0.091	0.149	0.621
Serum glucose, mg/dL	-0.111	-0.595	0.373	0.642
Energy restriction	3.311	-15.890	22.513	0.726
Atorvastatin	3.228	-17.725	24.180	0.754
<i>HDL particle's triglycerides</i>	0.087			
Constant	1.206	-2.376	4.788	0.496
Serum sirtuin-1, pg/mL	0.008	-0.016	0.032	0.511
BMI, kg/m <sup>2</sup>	0.379	-2.216	2.974	0.767
Serum HDL-c, mg/dL	0.067	-0.288	0.423	0.700
Serum LDL-c, mg/dL	0.003	-0.048	0.053	0.912
Serum triglycerides, mg/dL	0.015	-0.020	0.050	0.387
Serum glucose, mg/dL	-0.044	-0.184	0.096	0.527
Energy restriction	0.970	-4.594	6.534	0.723
Atorvastatin	-0.060	-6.131	6.012	0.984

**Table S3.** HDL particle's antioxidant capacity (full model).

Full Model					
Variables	R <sup>2</sup>	β	95% CI for β		p-value
			Lower	Upper	
<i>VMax</i>	0.304				
Constant		0.075	-0.070	0.221	0.294
Serum sirtuin-1, pg/mL		0.000	-0.001	0.001	0.615
BMI, kg/m <sup>2</sup>		0.052	-0.102	0.205	0.492
Serum HDL-c, mg/dL		0.011	-0.005	0.026	0.175
Serum LDL-c, mg/dL		0.002	0.000	0.004	0.060
Serum triglycerides, mg/dL		0.000	-0.002	0.001	0.596
Serum glucose, mg/dL		-0.001	-0.007	0.005	0.689
Energy restriction		-0.006	-0.218	0.207	0.955
Atorvastatin		0.013	-0.205	0.232	0.899
<i>TMax</i>	0.227				
Constant		4.135	-7.206	15.476	0.457
Serum sirtuin-1, pg/mL		-0.002	-0.080	0.075	0.955
BMI, kg/m <sup>2</sup>		5.420	-6.543	17.383	0.357
Serum HDL-c, mg/dL		0.358	-0.874	1.590	0.553
Serum LDL-c, mg/dL		0.170	-0.002	0.341	0.053
Serum triglycerides, mg/dL		-0.041	-0.151	0.068	0.444
Serum glucose, mg/dL		-0.010	-0.476	0.456	0.964
Energy restriction		4.289	-12.303	20.880	0.597
Atorvastatin		4.374	-12.692	21.440	0.600
<i>Optic density peak</i>	0.244				
Constant		0.017	-0.026	0.059	0.425
Serum sirtuin-1, pg/mL		0.000	0.000	0.000	0.950
BMI, kg/m <sup>2</sup>		0.008	-0.037	0.053	0.714
Serum HDL-c, mg/dL		0.002	-0.003	0.007	0.401
Serum LDL-c, mg/dL		0.001	0.000	0.001	0.054
Serum triglycerides, mg/dL		0.000	0.000	0.000	0.714
Serum glucose, mg/dL		0.000	-0.001	0.002	0.665

Energy restriction	0.004	-0.058	0.067	0.885
Atorvastatin	0.014	-0.050	0.078	0.648
<i>Area under the curve</i>	0.174			
Constant	215.151	-421.240	851.542	0.490
Serum sirtuin-1, pg/mL	0.205	-4.145	4.555	0.923
BMI, kg/m <sup>2</sup>	18.952	-652.315	690.220	0.954
Serum HDL-c, mg/dL	20.817	-48.320	89.955	0.538
Serum LDL-c, mg/dL	6.981	-2.657	16.619	0.147
Serum triglycerides, mg/dL	-0.285	-6.430	5.860	0.924
Serum glucose, mg/dL	5.801	-20.341	31.942	0.649
Energy restriction	-52.767	-983.762	878.228	0.907
Atorvastatin	169.693	-787.922	1127.309	0.716